# STATUS OF INDIAN MEDICINE AND FOLK HEALING

## With a focus on benefits that the systems have given to the public


**Shailaja Chandra**
Former Secretary, Government of India
Ministry of Health & Family Welfare, Department of AYUSH
and
Former Chief Secretary, Government of Delhi

Under the aegis of
**Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH)**
**Ministry of Health & Family Welfare**
**Government of India**
AUGUST 2011

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**With a focus on benefits that the systems have given to the public**

**(Part-I)**

**Shailaja Chandra**
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Under the aegis of
**Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH)**
**Ministry of Health & Family Welfare**
**Government of India**
AUGUST 2011

*Front cover:*
Collage of medical manuscripts in Sanskrit, Tamil and Arabic

*Back cover:*
Holy basil *(Ocimum sanctum)*

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# Acknowledgements

In May 2010 the Department of AYUSH, Ministry of Health & Family Welfare, entrusted to me the preparation of a Report on the status of Indian medicine (Ayurveda, Unani and Siddha systems). The focus was on the benefits that the public has received. The Report was additionally required to indicate the gaps that needed to be filled when the 12$^{th}$ Plan (2012–2017) was formulated. I am very grateful to the Minister for Health and Family Welfare Shri Ghulam Nabi Azad who, in his capacity as the President of Central Council for Research in Unani Medicine (CCRUM), approved that this assignment may be given to me.

Indeed this was an opportunity for me to return to a world I had inhabited 10 years ago as the Union Secretary of the Department. More significantly, it provided me with the opportunity to observe the intersection of the three medical systems, specifically covering developments in research, education, practice, and drugs, viewed through the lens of public benefit. But opportunities alone cannot secure results. Nothing would have materialized had the Department of AYUSH not written to the relevant Ministries and organizations, the state governments and all key stakeholders to facilitate my research. The Department's initiative provided me with a special passport, enabling me to visit a vast number of institutions and also to interact with a wide range of experts and individuals.

CCRUM provided me with a generous grant and institutional support. These were precious assets without which I could not have functioned. Effectively, I could start on this Report only in August 2010 but from the very beginning I was clear that my work not be yet another regurgitation of the well-known facts. I decided to build the report by conducting a series of interviews and recording these interactions. I also sent questionnaires to the relevant stakeholders and the responses received both written and oral have formed the foundation of this Report.

Countless people supported my efforts and their role is acknowledged here, perhaps far too briefly. Others, who might be unnamed here, will be named in the chapters that follow.

### Department of AYUSH, Ministry of Health & Family Welfare and Ministry of Science & Technology

For giving me access to the site on which to stage my enquiry, I owe my thanks to the former Secretary, AYUSH Smt. S Jalaja who appreciated the significance for such a report as a precursor to the formulation of the 12$^{th}$ Plan. She retired soon after I began my work but I was fortunate to work with her successor Shri Anil Kumar, someone whom I had met many years ago in a different capacity. Our past amity served me well now, as he continued to extend support. I also received the utmost consideration from Joint Secretaries Shri DD Sharma, Dr. Rakesh Sarwal and Director Meenakshi Negi and Vikram Singh Gaur (now JS).

I enjoyed the privilege of in-depth personal interactions with the Secretaries/Directors General of the Department of Health Research/ICMR Dr. V M Katoch, the Secretary, Department of Science and Technology, Dr. T Ramasami, the Director-General of CSIR Dr. Samir K Brahmachari and the Senior Adviser in the Department of Biotechnology Dr. S Natesh. These meetings led to fascinating conversations some of which they were kind enough to let me record. I was also helped enormously by the liberal support given personally by Dr. Surinder Singh the Drugs Controller General (India) and his Deputy Shri M Mitra, who went out of their way to be of help.

### State Governments

The State governments that I visited and the Secretaries and Directors of Indian Systems of Medicine that organized my visits deserve particular thanks. I benefited hugely by several interactions with educationists, practitioners and research scholars who were invited to meet me. In particular, I received

frank and unstinting advice from the Secretary, Medical Education and ISM in Maharashtra Shri Milind Mahaiskar, his counterpart in Gujarat Shri Rajesh Kishore, the Rajasthan Health Secretary, Shri Rajesh Swarup and the Kerala Health Secretary, Shri KS Srinivasan. The Directors of ISM/Ayurveda viz., Dr. KR Kohli from Maharashtra, Shreekantiah from Karnataka, Medha Jani from Gujarat, Dr. GS Badesha from Chhattisgarh and Chandrashekharan from Tamil Nadu organized my visits exactly as I had requested; some of them did me the courtesy of accompanying me throughout my trips. It was during those long drives that I could engage them in detailed conversation and as a result learnt greatly about the way the systems operate beyond the state capitals. The Directors of the National Institutes of Ayurveda, Unani Medicine and Siddha, Dr. Ajay Kumar Sharma, Prof. MA Jafri and Dr. K Manickavasakam gave quality support and made my visits really meaningful. Dr. MS Baghel, the Director of the Institute for Post-graduate Training & Research in Ayurveda (IPGT&RA) under the Gujarat Ayurved University, Jamnagar conducted a candid interaction with the entire faculty which was immensely useful.

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### Academic Advisors

The historical perspective that appears in three Chapters 1, 3 and 6 was prepared after receiving detailed insights from Dr. V Sujatha, Associate Professor, School of Social Sciences, Jawaharlal Nehru University. She not only provided me access to numerous books and published papers from her personal collection but gave me the benefit of a comprehensive tutorial on how history and social science had viewed the development of Indian medicine. I owe her an enormous debt not only for her time and expertise but also for patience with my initial blunders. Repeatedly, she guided me back on track, all this without once imposing her own views.

I also had the advantage of several, tremendously informative interactions with Dr. Madhulika Bannerjee, Associate Professor, Department of Political Science, University of Delhi. She helped me to understand the influence exercised by diverse groups that had shaped the world of Indian medicine.

### Research Approach

Instead of recruiting full-time persons, I preferred to rely on part-time consultants and research officers. This was largely because I wanted people who had experience with research and practice but who could be engaged for completing specific tasks. Apart from the DG, CCRUM, Professor Syed Shakir Jamil, and DG, CCRAS Dr. Ramesh Babu Devalla, it was Dr. R V V Prasad, Director, Rashtriya Ayurveda Vidyapeeth who helped me identify research officers and practitioners who would measure up to my expectations. Most of these part-time research staff worked late into the night and on holidays to stick to impossible targets.

### Experts and Research Staff *(in order of contribution to research chapters)*

I thank Dr. Ala Narayana, Director, National Institute of Medical Heritage (NIMH), Hyderabad (CCRAS) for giving me access to so much chronological data. But I could never have digested all that material or the complex findings of so many historians and social thinkers had it not been for the perseverance

of Mahesh Deepak, guest lecturer in history at Dyal Singh College, Delhi University who unraveled the confusion that I had created in trying to absorb too much. He helped me to break down the information and to tell the story as I wanted to.

Among the innumerable Vaidyas who went out of the way to help me Vaidya Devendra Triguna, President, All India Ayurveda Congress stands out for supplying much of the documentation about the creation of an independent Department for Ayurveda, Yoga, Unani, Siddha and Homoeopathy (AYUSH). The chapter on research was made possible through the unstinting support that I received from all the scientific organizations and individual experts who are named in the chapter. But special mention has to be made of the practical insights and professional support that was extended by Dr. V K Gupta, Director, NISCOM, CSIR and Chairman of Traditional Knowledge Digital Library (TKDL). He gave me valuable guidance when I worked on the chapter on tribal and folk medicine. More importantly, he made sure that the promises made by scientists of CSIR from across the country to supply me with material were indeed honoured in a timely manner.

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In the chapter on medical practice, I was assisted by Dr. Pavan Mali who fortuitously (for me) functioned from Tihar Jail (located next door to CCRUM) as Senior Medical Officer (Ayurveda). He had to disentangle, assemble and reassemble armfuls of documents, brochures and photographs relating to medical practice, all of which I off-loaded into his satchel after each visit to the states.

For compiling the sub-chapter on Unani practice, I entrusted the task to Dr. Uzma Bano, Clinical Registrar in Majeedia Hospital because I wanted a practitioner who could ask questions and take photographs. The Siddha section on practice was the outcome of my own visits to so many places but it has been put together by Dr. Senthil Vel, Research Officer (Siddha).

I thank the CEO of the National Medicinal Plants Board Shri Bala Prasad for responding to all my questions. Shri Darshan Shankar, Chairman, Institute of Ayurveda and Integrative Medicine, Bengaluru inspired me to include the chapter on medicinal plants and his persuasive manner and vast knowledge base greatly supported my work. That particular chapter was a challenge as I had my own ideas of its content. But it was becoming increasingly difficult to communicate what was in my head to others. Just when I thought those ideas perhaps had no future, I visited the Gujarat Ayurved University in Jamnagar, where I met Dr. Ashok BK, Research Assistant, Department of Pharmacology, whom I intuitively trusted. I cajoled him to come to Delhi and work with me for a short while. He managed to give a direction to my thoughts and together with Chinmay Rath, a competent and agreeable SRF (Botany) loaned to me fleetingly by the DG, CCRAS. I was finally able to test my theories on folk medicine which are now in the Report.

In the chapter on drugs, chief among my advisers and avid critics were Dr. Anantha Narayana DB, Retd. Director, Regulatory Affairs, Unilever Research, Bengaluru and Ranjit Anand Puranik, CEO, Shree Dhootapapeshwar, Mumbai. They helped me to focus on priorities and agreed and disagreed with my ideas with polite candour. The initial guidance before the issues were debated was extended by

Dr Rajeev Sharma, Director, PLIM while Shri Ravinder Singh, Assistant Director (Chemistry), CCRAS outlined the legal scenario in a simple way.

### Core Project Staff

As far as the core of the project is concerned, I have to thank Dr. Sarada Ota, Research Officer (Ayurveda) from CCRAS who was loaned to me on a strictly part-time basis by the DG, CCRAS. She too had to unscramble huge amounts of data and to accommodate my unreasonable demands (and crabbiness). Her quick ability to identify the technical and supporting inputs that I needed at each juncture helped me to complete tables, graphs, editing and get typing done in a timely manner. And I owe her even more for keeping a smiling face throughout.

From CCRUM I must thank Shri SM Adhami, Deputy Director (Statistics) who enabled me to give statistical shape to reams of data. Dr. Khalid M Siddiqui, Assistant Director, CCRUM helped me find my feet initially.

My old ally Mr. Mehr-e-Alam Khan, Research Officer (Publication) at CCRUM handled the printing work with the eye of a hawk and the calmness of a dove. He showed no exasperation with my constant somersaults in the final stages of printing and even corrected my language – something I had prided myself on – until I was confronted with the many mistakes that he pointed out. If they still remain I am entirely to blame.

### Well-wishers

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### Back-end Support

I am thankful to Dr. DP Sharma, Research Officer (Retd.), Chemistry (CCRAS) who edited the first drafts and smoothened their raw edges. I am responsible for mistakes that may remain.

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All these people made it possible for me to achieve what I had set out to accomplish, and my gratitude goes out to each one of them. I will always cherish my association with all those I came into contact with through this project many of them old associates and allies – some completely new.

The time allotted to me to complete the Report was until the end of 2011 but I was requested to prepare it even sooner so it could inform the preparation for the 12$^{th}$ Plan. As a via-media, the report has been compiled on the basis of the research undertaken thus far, leaving the next few months to complete the second Part of the Report in which I hope to complete an assessment of the work of Rashtriya Ayurveda Vidyapeeth and to record findings on AU practice in the states of Uttar Pradesh, Jammu & Kashmir, Bihar, Andhra Pradesh, West Bengal and the North East which could not be visited due to shortage of time. The main recommendations are generic in nature and are unlikely to change.

At this juncture Part-I of the Report is being submitted with the sincere anticipation that the recommendations would be of use while formulating the 12$^{th}$ Five Year Plan. The findings and recommendations do not however reflect the views of the Department of AYUSH. This is my personal assessment based on interaction with numerous stakeholders and their written or recorded views.

New Delhi
1 August 2011

Shailaja Chandra
Principal Investigator
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186. Mr. Nimish Shroff
Director
Charak Pharma (P) Ltd, Mumbai
187. Shri Shashank Sandu
Managing Director
Sandu Brothers P Ltd
188. Dr. Nagesh Sandu
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190. Mrs. Manisha Naik
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192. Mr. VB Ukani
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193. Mr. Sudhakar Pathak
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195. Mr. Milan V Mehta
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197. Mr. Chandrakant Bhanushali
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# Acronyms and Abbreviations

| | |
|---|---|
| A & U | Ayurveda and Unani |
| AAS | Atomic Absorption Spectrophotometry/Atomic Absorption Spectroscopy |
| ACAOM | Accreditation Commission for Acupuncture and Oriental Medicine |
| ADMA | Ayurvedic Drug Manufacturers' Association |
| AFI | Ayurvedic Formulary of India |
| AIDS | Acquired Immunodeficiency Syndrome |
| AIIA | All India Institute of Ayurveda |
| AIIMS | All India Institute of Medical Sciences |
| AJCM | American Journal of Chinese Medicine |
| AKT | Anti Koch's Treatment/Therapy |
| AMA | American Medical Association |
| AMU | Aligarh Muslim University |
| ANC | Antenatal Care |
| ANMs | Auxiliary Nurse Midwives |
| AP | Andhra Pradesh |
| APFPEDA | Agricultural and Processed Food Products Export Development Authority |
| API | Ayurvedic Pharmacopoeia of India |
| APMC | Agricultural Produce Marketing Committee |
| APR | Annual Performance Report |
| ASEAN | Association of South-East Asian Nations |
| ASHA | Accredited Social Health Activist |
| ASSOCHAM | Associated Chambers of Commerce and Industry |
| ASU | Ayurveda, Siddha and Unani |
| AYU | An International Quarterly Journal of Research in Ayurveda |
| AYUSH | Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy |
| BAIF | Bharatiya Agro Industries Foundation (A Development Research Foundation is a professionally managed non-profit Public Trust, established in 1967 at Karnataka) |
| BAMS | Bachelor of Ayurvedic Medicine and Surgery |
| BHMS | Bachelor of Homoeopathic Medicine and Surgery |
| BHU | Benaras Hindu University |
| BIMS | Bachelor of Indian Medicine and Surgery |
| BMJ | British Medical Journal |
| BP | British Pharmacopoeia |
| BPharma | Bachelor of Pharmacy |
| BSI | Botanical Survey of India |
| BSMS | Bachelor of Siddha Medicine and Surgery |
| BUMS | Bachelor of Unani Medicine and Surgery |
| CAM | Complementary and Alternative Medicine |
| CCCIM | Centigrade/Celsius Central Council for Indian Medicine |
| CCE | Continuous Comprehensive Evaluation |
| CCIM | Central Council of Indian Medicine |
| CCRAS | Central Council for Research in Ayurveda and Siddha |
| CCRH | Central Council for Research in Homoeopathy |
| CCRIMH | Central Council for Research in Indian Medicine and Homoeopathy |
| CCRUM | Central Council for Research in Unani Medicine |
| CCRYN | Central Council for Research in Yoga and Naturopathy |
| C-DAC | Centre for Development of Advanced Computing |
| CDRI | Central Drug Research Institute |
| CDRS | Composite Drug Research Scheme |
| CEO | Chief Executive Officer |
| CGHS | Central Government Health Scheme |
| CHS | Central Health Service |
| CIMAP | Central Institute of Medicinal and Aromatic Plants |
| CIPO | Canadian Intellectual Property Office |
| CMC | Christian Medical College, Vellore |
| CME | Continuing Medical Education |
| CRAC | Cyber Regulation Advisory Committee |

| | |
|---|---|
| CSIR | Council of Scientific and Industrial Research |
| CST | Central Sales Tax |
| CT | Computerised Tomography |
| CTM | Centre for Traditional Medicine |
| CTMR | Centre for Traditional Medicine and Research |
| CWIS | Centre for World Indigenous Studies |
| D&C | Drugs and Cosmetics |
| D/o | Department of |
| DALHT | Documentation and Assessment of Local Health Traditions |
| DBT | Department of Biotechnology |
| DCGI | Drug Controller General of India |
| DDT | Dichlorodiphenyltrichloroethane |
| DG | Director General |
| DGCIS | Directorate General of Commercial Intelligence and Statistics |
| DIPSAR | Delhi Institute of Pharmaceuticals Sciences and Research |
| DM | Diabetes Mellitus |
| DNA | Deoxyribonucleic Acid |
| DoA | Department of AYUSH |
| DPRP | Diabetes Physician Recognition Program |
| DPRP | Drugs & Pharmaceuticals Research Programme |
| DRDO | Defence Research and Development Organisation |
| DST | Department of Science & Technology |
| DUB | Dysfunctional Uterine Bleeding |
| e-CAM | Evidence-based Complementary and Alternative Medicine |
| EDUSAT | Education Satellite |
| ENT | Ear, Nose and Throat |
| EPO | European Patent Office |
| ESI | Employees State Insurance |
| ESIC | Employees State Insurance Corporation |
| EU | European |
| EXIM | Export Import (Policy) |
| FAQs | Frequently Asked Questions |
| FDA | Food and Drug Authority |
| FMBS | Fazil-ut-Tib (Bachelor of Medicine and Surgery) |
| FMCD | Fastest Moving Consumer Drugs |
| FRI | Forest Research Institute |
| FRLHT | Foundation for Revitalization of Local Health Traditions |
| FSSA | Food Safety and Standards Act |
| GAU | Gujarat Ayurveda University |
| GMP | Good Manufacturing Practice |
| GO | Government Order |
| GOI | Government of India |
| GTP | Golden Triangle Project |
| H&FW | Health and Family Welfare |
| HFRC | Herbal Folklore Research Centre |
| HHG | Home Herbal Garden |
| HIV | Human Immunodeficiency Virus |
| Hkm | Hakim |
| HMP | Herbal Medicinal Products |
| HPL | Homoeopathic Pharmacopoeial Laboratory |
| HPLC | High-Performance Liquid Chromatography (sometimes referred to perhaps erroneously as High-Pressure Liquid Chromatography) |
| HPTLC | High Performance Thin Layer Chromatography |
| HTN | Hypertension |
| HYD | Hyderabad |
| ICAR | Indian Council of Agriculture Research |
| ICMR | Indian Council of Medical Research |
| ICP | Inductively Coupled Plasma |
| ID | Identification |
| IDEA | Integrated Development through Environmental Awakening |
| IGNOU | Indira Gandhi National Open University |
| IICB | Indian Institute of Chemical Biology |
| IICT | Indian Institute of Chemical Technology |
| IIFT | Indian Institute of Foreign Trade |
| IIIM | Indian Institute of Integrative Medicine |
| IIP | Indian Institute of Packaging |
| IIPS | International Institute for Population Sciences |
| IITR | Indian Institute of Toxicology Research |
| IJAR | International Journal of Ayurveda Research |
| IJMR | Indian Journal of Medical Research |
| IM | Indian Medicine / Integrative Medicine |
| IMCC | Indian Medicine Central Council |

| | |
|---|---|
| IMMT | Institute of Minerals and Materials Technology |
| IMPCL | Indian Medicine Pharmaceutical Corporation Limited |
| IND | Investigational New Drug |
| IPC | International Patent Classification |
| IPD | In Patient Department/ Individual Patient Data |
| IPGT&RA | Institute of Post Graduate Teaching and Research in Ayurveda |
| IPRs | Intellectual Property Rights |
| IPRS | Innovative Products Research & Services |
| ISM | Indian Systems of Medicine |
| ISM&H | Indian Systems of Medicine & Homoeopathy |
| ISO | International Organization for Standardization |
| IT | Information Technology |
| ITRC | Information Technology Response Centre/Industrial Toxicological Research Centre |
| JAIM | Journal of Ayurveda and Integrative Medicine |
| JAMA | Journal of American Medical Association |
| JBC | Journal of Biological Chemistry |
| JEP | Journal of Experimental Psychology |
| JJVS | Jagran Jan Vikas Samiti |
| JV | Joint Venture |
| KAVS | Kottakal Arya Vaidya Shala, Kerala |
| MANAS | Proprietary Ayurvedic formulation developed by CCRAS for mental retardation. |
| MBA | Master of Business Administration |
| MBBS | Bachelor of Medicine and Bachelor of Surgery |
| MCH | Maternity and Child Health |
| MCI | Medical Council of India |
| MD | Doctor of Medicine |
| MODVAT | Modified Value Added Tax |
| MOHFW | Ministry of Health and Family Welfare |
| MoU | Memorandum of Understanding |
| MP | Madhya Pradesh/Member of Parliament |
| MPharm | Master of Pharmacy |
| MRI | Magnetic Resonance Imaging |
| MS | Master of Surgery |
| MSc | Master of Science |
| MT | Metric Tonne |
| NASH | Non-Alcoholic Steato-Hepatitis |
| NBE | National Board of Examinations |
| NBPGR | National Bureau of Plant Genetic Resources |
| NBRI | National Botanical Research Institute |
| NCCAM | National Centre for Complementary and Alternative Medicine |
| NCERT | National Council of Educational Research and Training |
| NCL | National Chemical Laboratory |
| NCHRH | National Council for Human Resources in Health |
| NCRHR | National Committee for Research in Human Reproduction |
| NCT | National Capital Territory (Delhi) |
| NEIFM | North Eastern Institute of Folk Medicine |
| NEIST | North East Institute of Science and Technology |
| NEJM | New England Journal of Medicine |
| NFPTCR | National Facility for Plant Tissue Culture Repository |
| NGB | National Gene Banks |
| NGO | Non-Governmental Organisation |
| NIA | National Institute of Ayurveda |
| NIC | National Informatics Centre |
| NIDDM | Non-Insulin Dependent Diabetes Mellitus |
| NIH | National Institutes of Health |
| NIIST | National Institute for Interdisciplinary Science and Technology |
| NIPER | National Institute of Pharmaceutical Education and Research |
| NIRRH | National Institute for Research in Reproductive Health |
| NISCOM | National Institute of Science Communication |
| NIST | National Institute of Science & Technology |
| NIUM | National Institute of Unani Medicine |
| NMITLI | New Millennium Indian Technology Leadership Initiative |

| | |
|---|---|
| NMPB | National Medicinal Plants Board |
| NRDC | National Research Development Corporation |
| NRHM | National Rural Health Mission |
| NRI | Non-Resident Indian |
| NSS | National Sample Survey |
| NSS | National Service Scheme |
| NSSO | National Sample Survey Organisation |
| OA | Osteoarthritis |
| OPD | Out Patient Department |
| OTC | Over-the-counter |
| P&P | Patent and Proprietary |
| PAF | People's Agricultural Farm |
| PASI | Psoriasis Area and Severity Index |
| PDF | Portable Document Format |
| PDR | Project Draft Report |
| PFA | Prevention of Food Adulteration |
| PG | Post Graduate |
| PGI | Post Graduate Institute, Chandigarh |
| PHC | Primary Health Centre |
| PhD | Doctor of Philosophy |
| PI | Principal Investigator |
| PIO | Person of Indian Origin |
| PLIM | Pharmacopoeial Laboratory for Indian Medicine |
| PO | Post Office |
| ppb | Parts Per Billion |
| ppm | Parts Per Million |
| PTSD | Post-Traumatic Stress Disorder |
| QCI | Quality Control of India |
| QOL | Quality of Life |
| R&D | Research and Development |
| RA | Research Assistant / Rheumatoid Arthritis |
| RCMPCC | Rural Communes Medicinal Plants Conservation Centre |
| RCS | Registrar Cooperative Society |
| RCT | Randomised Controlled Trial |
| RGUHS | Rajiv Gandhi University of Health Sciences |
| RML | Ram Manohar Lohia (Hospital) |
| RMP | Rural Medical Practitioners |
| ROTP | Re-Orientation Training Programme |
| RRIUM | Regional Research Institute of Unani Medicine |
| RRL | Regional Research Laboratory |
| SAC | Scientific Advisory Committee |
| SC/SHC | Sub Centre/Sub Health Centre |
| SMPB | State Medicinal Plant Board |
| SOP | Standard Operating Procedures |
| SPIKAP | Society for Promotion of Indigenous Knowledge and Practice |
| SRDT | Shanthimalai Research & Development Trust |
| SRF | Senior Research Fellow |
| SRISTI | Society for Research and Initiatives for Sustainable Technologic and Institutions |
| SSI | Small Scale Industries |
| STD | Sexually Transmitted Diseases |
| STZ | Streptozotocin |
| TBA | Traditional Birth Attendant |
| TBGRI | Tropical Botanical Garden & Research Institute |
| TCM | Traditional Chinese Medicine |
| TKDL | Traditional Knowledge Digital Library |
| TKRC | Traditional Knowledge Resource Classification |
| TLC | Thin Layer Chromatography |
| TM | Traditional Medicine |
| TNMC | Topiwala National Medical College |
| TOS | Therapeutic Outcome Studies |
| TRDF | Taralabalu Rural Development Foundation |
| TV | Television |
| TVM | Trivandrum / Thiruvananthapuram |
| UAP | Unjha Ayurvedic Pharmacy |
| UG | Under Graduate |
| UGC | University Grants Commission |
| UKPO | United Kingdom Patent Office |
| UNIM | Drug code for Unani medicine in CCRUM |
| UP | Uttar Pradesh |
| UPC | Unani Pharmacopoeia |
| US | United States |
| USA | United States of America |
| USPTO | United States Patent and Trademark Office |
| UVA | Ultraviolet A |
| UVB | Ultraviolet B |
| UVC | Ultraviolet C |
| VA | Veteran Affairs |
| VP | Vallabhbhai Patel (Chest Institute at Delhi) |
| WSSS | Wayanad Social Service Society |

# Executive Summary

## Focus of the Report

This Report has six chapters and an Epilogue. The genesis of each chapter and important features that stand out are summarised below. The Report describes the status of Ayurveda, Siddha and Unani (ASU) systems of medicine with reference to areas that impact directly on the public. Consequently, aspects of work that go on elsewhere in the traditional medicine sector but do not directly touch peoples' lives have not been included here. Since the thrust is on the Indian public, the globalisation aspects of ASU are also not included except briefly in the Epilogue.

## Chapter 1: Historical Perspective

The historical developments that have impacted on this sector have been described in the first chapter and also in the introduction to the chapters on Education and Drugs. This has been done because the history of Indian medicine is generally available to policy makers in the form of summaries. These do not give an idea of events and policies that have influenced the world of ASU. Most generalist administrators assume office as Secretaries and Directors of Indian Systems of Medicine (ISM) in the Ministry of Health or in the States, without an exposure to the historical evolution of policy. This often leads to understanding priorities as presented by one or more protagonist groups in which the consideration of public benefit often takes second place.

The whole debate between purists and modernists in fact started in the 19th century but the issues are alive even today and remain unresolved. That dichotomy has been carried through and is reflected in the structure of the college curricula, medical practice, the manufacture of drugs, their packaging and marketing. All this even as the formulation of drugs by hand and traditional practice of medicine continues side by side. Given this background it is only by reading the critiques published by those who had no stake in the power-play of knowledge or commerce is it possible to understand factors that have driven and continue to influence the sector.

The first Chapter describes the history from 1912 onwards and the responses of the Vaidyas and Hakims to the advent of Western medicine and their efforts to re-position traditional medicine. After independence there was growing support for Indian medicine but almost every Committee set up by the Government recommended that the systems re-prove themselves by meeting the benchmarks for scientific research as prescribed for modern medicine. The move to integrate the systems with modern medicine through the vehicle of education resulted in a backlash. Although the integrated course was discontinued, subsequent developments caused by market developments and the aspirations of the ASU practitioners who sought parity with the modern medicine sector has led to the re-introduction of a heavy component of modern medicine in the curricula of ASU professional colleges.

Political support for ASU has not been lacking either at the Centre or many states. The history of the creation of an independent Department, the change in the name of the Department from ISM to AYUSH, and efforts to spread awareness about the systems in other countries have been described which were the result of the protagonists of traditional medicine devoid of vestiges of modern medicine.

## Chapter 2: Research

From the '60s onwards, investments have been made in pursuing traditional medicine research. In the government sector this was initially done by the Indian Council of Medical Research (ICMR) and somewhat later by the Council of Scientific and Industrial Research (CSIR), the Department of

Biotechnology (DBT) and the Department of Science and Technology (DST). In the 70s, autonomous research councils were established for pursuing research in ASU medicine. The chapter attempts to collate at one place specific outcomes of research that directly benefit the public.

In summary, some of the work of CSIR related to a few drugs that have reached the market, the superb execution of the traditional knowledge digital library and efforts made towards drug standardisation stand out.

In the case of ICMR, despite a promising start, proven research findings published by the Council have not been translated into products even when all the rigours of biomedical research have been adhered to, as in the case of *Vijaysar* for diabetes.

The outcomes reported by DBT give hope for the future, when seen as initiatives that can protect, preserve and conserve specific medicinal plants; but the dimension of the impact has to be seen against the extent of shortage of medicinal plants and the gaps that biotechnological interventions can hope to fill.

An enumeration of numerous projects awarded by DST exhibit the thrust areas of those who have been pursuing research with funding support. All the projects continue to be in progress, in some cases, for several years. According to DST it is too early to talk of outcomes. On another plane, the advice of Secretary, DST on how future clinical research should be undertaken provides a simple roadmap for the future that carries conviction. The approach has been corroborated by several experts engaged in traditional medicine research and has been described fully.

On the basis of responses received from the Central Councils engaged in conducting research into Ayurveda, Siddha and Unani medicine, two facts stand out: first that in-house clinical research undertaken by the councils has not yielded positive outcomes either by way of published work or by way of grant of patents. Despite that, thousands of people are reported to have benefited from the utilisation of formulations prepared by the two councils and the demand for treatment offered at various centres is extensive. A change of track has been recommended in the report along with a new mantle to be donned by the research councils, so that the work done for more than three decades can at least now benefit a wider public.

The chapter on research also gives a bird's-eye view of the canvas on which academic research in the ASU sector is undertaken in universities and colleges along with the impact factor of research undertaken by such bodies.

## Chapter 3: Education

In this chapter after recounting the broad status of how college education for the traditional systems of medicine was first introduced in the early 19$^{th}$ century, the current status has been described with special reference to the curriculum and syllabus prescribed for undergraduate and postgraduate medical education courses. The chapter is based upon the outcome of extensive consultations held with the faculties of universities and leading ASU colleges and written responses received to detailed questionnaires sent online and through post. The findings indicate a host of shortcomings that exist from the point of view of the majority of stakeholders. Based upon their opinions and suggestions, recommendations have been made on various aspects of the curriculum and syllabus.

More importantly, the case has been made to view professional education in the traditional medicine sector as a means to build competences and skills in the practitioner which would be beneficial for the delivery of health services but more specifically to treat patients seeking authentic ASU treatment. The debate between inclusion and exclusion of modern medicine has been addressed presenting the views expressed by the Courts, the ground realities and well-known arguments on both sides. The recommendations made are based upon the views of state governments and individual faculty members that had contributed in a series of discussions and in response to the questionnaires.

In particular, the orientation of the curriculum, the need for involvement of professional bodies in curriculum design, a discussion on bed strength and availability of inpatient load, the sequencing of the training, the need for paramedical and non-teaching staff, suggestions relating to the teaching of Sanskrit and Urdu, improvement in the availability of text books and journals, teachers' qualifications and aptitude have been reflected, based on comments received. Other aspects like the need for early exposure to good clinical practice to satisfy the students' curiosity, improving computer literacy, the need to encourage intra-ASU system interaction and the possibility of introducing a bridge course for modern medicine doctors have also been discussed.

The chapter discusses the need for using information technology to be able to teach the practical component of the curriculum by establishing a Virtual Resource Centre and by providing downloadable modules so that students regardless of their institution receive the opportunity for meaningful self-study.

## Chapter 4: Practice

This chapter is descriptive of actual practice as conducted in the government set-up and in private establishments. Different levels at which clinical care is offered, whether through a single practitioner or through multi-speciality hospitals, has been described. This is intended to be a quick cross-sectional view to give an idea of the kind of cases that are being treated, the clientele that seems to be accessing services and the general atmosphere in which patient care services are provided. There is minimal written description and the effort is to present a series of photographs which speak for themselves. The need for public edification has been discussed particularly as few people know of the existence of such practice. Also the need for agreed standards on Panchakarma procedures which are increasingly being presented only as relaxation massage. Several unique practices go on in a highly localised context but they have seem to have potential for addressing not only chronic diseases but also for alleviating pain and discomfort caused by modern-day lifestyles. The illustrated chapter presents a pictures of the reality of ASU practice. The picture is uneven but the outreach is substantial.

Several recommendations have been made for building greater awareness about the availability of specific treatment and on creating more avenues to access reputed ASU treatment.

## Chapter 5: Medicinal Plants

This chapter has three sub-chapters dealing with:

- The Uniqueness of Traditional and Folk Medicine
- The Raw drug trade - Interaction with dealers
- Demand and supply of raw drugs

The first sub-chapter is an attempt at exploring whether the usage of certain medicinal plants used by tribal and folk practitioners reported in the monographs prepared by the Research Councils (and which do not find place in the codified ASU texts) are unique as compared to their reported usage in published scientific literature. The findings cannot form the basis for any assumption but it does show that the use of medicinal plants by tribal and folk healers is unique, at least in the few cases taken up for study in this Report. This points to the need to go beyond mere documentation to foster further enquiry into the findings.

The second sub chapter-deals with the main conduit through which medicinal plants are procured and purchased by the raw drug dealers. The traders are important because they have a virtual monopoly on the supply of medicinal plants to industry but little has been done to upgrade their practices either through training, incentives for modernisation or through regulation. This is one of the most important links in the chain of drug processing and manufacture and determines the quality of inputs that go into the making of ASU drugs. Therefore it was important to understand what the traders had to say.

The chapter shows that they are willing to move to better practices but equally, as invariably happens whenever there is a move to change the status quo, there is a tendency to shift the responsibility on to the government. The chapter gives an understanding of how far it might be possible to reorient the collection and supply of medicinal plants.

The third sub-chapter deals with the demand and supply of medicinal plants and tries to show the enormous opportunity that lies ahead for India to become a strong and sustainable supplier of raw and processed drugs after meeting its own needs. The measures that would have to be adopted based upon the advice of botanists, those who regulate drug manufacture in the government, professionals in charge of quality control and regulatory affairs in the ASU drug industry have been recounted. A roadmap for temporarily utilising existing structures and eventually setting up new organisations has been described.

In the long term, there is a suggestion to set up a professional institute for managing trade in medicinal plants with a division for tribal and folk medicine and using extensive surveys undertaken by 22 centres under the ASU research councils. The suggestion is to set up a consortium of similar institutions that are all working in this area to run professional courses which would develop regulatory and marketing competencies needed to manage the many facets of the medicinal plant sector to run productively. Also to use the result of pain staking work done on tribal and folk medicine imaginatively so that the oral tradition remains alive.

On improving the availability of medicinal plants, after describing the supply chain, there is a suggestion to set up a Federation which can work through a cooperative network to encourage the collection, grading and certification of medicinal plants by using lateral linkages which are already available. The role of the National Medicinal Plants Board has also been dwelt upon, not to recount what is already well-known but to indicate a wider role that NMPB should be encouraged to play.

## Chapter 6: Drugs

In this chapter the history of ASU drug manufacture and the move to mechanisation and regulation have been described going back to the colonial period and the enactment of specific laws governing this sector in 1960s and '70s. The introduction is followed by three sub-chapters:

- Manufacture of ASU drugs and quality assurance.
- Dipstick Survey of Consumer preference for ASU products.
- Dipstick Survey of industries manufacturing ASU products.

In the first sub-chapter relating to quality assurance, the current status, the legal provisions and the way in which ASU drugs are presently marketed have been described. The need for insistence on Good Manufacturing Practices (GMP) juxtaposed with the fact that two-fifths of the manufacturing units do not possess this mandatory requirement has been discussed; the continuance of the traditional manufacturing processes and the need for also sustaining them as a part of tradition and history but not through organised retail trade have been debated on the basis of ground realities. A roadmap for dealing with this situation by setting up a new category of traditional processors that can supply their products to practitioners but cannot market the produce in retail has been deliberated upon, elaborating the risks of maintaining the status quo.

The need for quality control and certification to ensure consumer safety has been highlighted, describing ways to move to more sophisticated ways of conducting tests to guard against substitution and adulteration; also to allay public apprehensions about the addition of non-permissible substances or the presence of heavy metals beyond permissible limits. Specific scientific tests which can build confidence have been referred to with the suggestion that there should be a focus on wholesale upgradation of testing requirements for both impurities and metal based preparations in the 12$^{th}$ Five Year Plan.

Contentious issues like the branding of classical medicine which is presently disallowed, systematising the licensing procedure, introducing simpler quality-control certification for consumer guidance, incentivising the use of cultivated raw material and upgrading pharmacopoeia standards to international levels has been discussed and several suggestions made.

The need for laying standards for new categories of ASU drugs such as beauty products so that the consumer knows the proportion of essential ingredients used by reading the label, has been discussed. Similarly a new category called ASU knowledge-based drugs have been suggested to be introduced on the lines of what is being done in some other countries which would enhance the credibility of the systems and garner investment for R&D.

The need for addressing claims which are made on the labels of ASU products which are legally not permissible and also for ending the display of advertisements which are misleading and are disallowed has been highlighted, indicating how this should be taken in hand in a decentralised way.

Finally, the need for widening the scope of the Traditional Knowledge Digital Library (TKDL) to be used not only to guard against patents but also for wider public use has been touched upon. The potential of this knowledge base is enormous and putting it to a positive use while safeguarding against exploitation need to be balanced. The recommendation is for holding wider policy consultation instead of freezing TKDL only as a means to ward off patents. Imaginative and innovative uses can be made of this database while currently there appears to be little thought beyond maintaining the status quo.

In the second sub-chapter, the result of a dipstick (a rapid survey) on consumer preferences of ASU drugs and the conditions to which they are being accessed has been given. Although it is just a ready reckoner of consumer preferences the similarity of responses from different cities shows that the findings on consumer knowledge and preferences are fairly reliable.

In the third sub-chapter the responses to a questionnaire sent to a large group of manufacturers and the views expressed by many of them have been captured. The conditions for which people access to drugs appear to tally on the whole with the responses received through the consumer survey.

Opinions and suggestions of manufacturers about the National Medicinal Plants Board, suggestions about improving quality control, and building awareness about the effectiveness and safety of ASU products have also been recounted.

## Epilogue

The epilogue as the name suggests is an addition to the Report. It is first time that there is a futuristic vision of the impact that can be made through the propagation and globalisation of Ayurveda. The conclusions point towards the need for high level co-ordination as Indian medicine has spin-offs for a wide range of beneficiaries but Indian players have to work in unison to grasp those benefits. Comparisons with China's focus on gaining recognition for acupuncture and the need to position high quality *Panchakarma* to demonstrate its effectiveness abroad has been justified. The need for a paradigm shift from approaches which have been pursued and have yielded insignificant results so far, has been underscored. Since the 12$^{th}$ Five Year Plan is on the anvil the time to act it concludes is now.

# Summary of Major Recommendations

## Research

### 1. Re-orientation of clinical research

Clinical research needs to adopt a multidisciplinary approach leading to comparative Therapeutic Outcome Research (TOR) studies which would indicate the degree of effectiveness of selected ASU treatment compared to conventional treatment. Instead of making it a drug based approach which has been the focus for the last 40 years, the ASU physician should be left free to offer treatment in a holistic way with the patients' parameters checked by an independent multidisciplinary group. Patients should be enrolled on a voluntary basis from those accessing treatment in allopathic hospitals for diseases/afflictions and who opt for ASU treatment. A multidisciplinary monitoring body comprising of independent experts (including ASU experts) should finalise the inclusion and exclusion criteria and a Central Register should list the patients that opt for ASU treatment. The therapeutic outcomes of patients undergoing ASU treatment as well as allopathic treatment should be documented by research officers and statisticians who report their findings directly to the multidisciplinary group for evaluation. This would give the public an authentic idea of the degree of effectiveness of ASU treatment rendered in a holistic way.

### 2. New mechanism for approval of multi-disciplinary clinical research

To conduct comparative studies on therapeutic outcomes, there is a need for co-ordination with the Department of Health, the DGHS, the ICMR, the medical superintendents and clinical heads of allopathic hospitals dealing with the identified diseases/ conditions where ASU has strength. This can only be done if the funding for such extramural clinical research projects is approved by a Secretary level officer. In the initial stages it is recommended that the Secretary AYUSH should chair this committee with advisers from ICMR and CSIR and medical superintendents and clinicians that run specialty clinics for diabetes, rheumatoid arthritis, bronchial asthma, liver disorders and skin problems in major allopathic hospitals. The DGs of CCRAS & CCRUM should be members of this committee and offer their advice on the award of such projects as well as the choice of ASU treatment centres and practitioners where holistic treatment can be provided. A budget would need to be earmarked for undertaking such research.

### 3. Recommendations to Enhance Collaborative Effort

Numerous projects related to traditional medicine are funded by different agencies. Often this results in a proliferation of small initiatives which do not yield outcomes of any substance from the public point of view. A review of research in progress in the traditional medicine sector (funded with public money) needs to be institutionalized. It would also discourage repetitive projects and ensure that the focus remains on outcomes of direct advantage to the public. Joint meetings of AYUSH, ICMR, CSIR, DBT and DST are already being held but a special meeting to conduct a stocktaking of clinical research projects is necessary to retain the focus.

## Recommendations Relating to the Research Councils – CCRAS and CCRUM

### 1. The aims and objectives of the research councils should be revisited

It seems wasteful for the Research Councils to continue producing formulations in the name of research, to treat patients that access the research facility but fall outside the research programme. As far as research is concerned decades of work has not led to the grant of patents or publications. In house documentation of the treatment provided cannot be accepted as credible evidence of effectiveness of the treatment extended under the umbrella of research. The conclusions lose credibility as they are self-referential.

In addition to areas of comparative strength which are quite specific and well known, the areas of maternal and child health were found very useful for reducing anaemia, enhancing breast milk and reducing the occurrence of vaginal tears during child-births. It is necessary to confirm the efficacy of such treatment in hospital settings to be evaluated

by an independent multidisciplinary group. CCRAS and CCRUM research officers engaged in clinical practice can the included in providing treatment as they have been doing such work for several decades.

## 2. Establishment of Specialty Clinics

The two councils have treated thousands of patients all over the country covering several disease conditions. According to the Councils' own responses they have documentation which shows a clear strength in 6 to 8 identified areas which have been described in detail in the chapter on the clinical work done by the Councils. Therefore, instead of treating whoever happens to come to the research centres in a general and diffused kind of way, the work needs to be reorganised so that specialty centres are opened to provide treatment for areas of proven strength. Each centre should be operated by the councils' staff that have in any case been providing treatment for decades. Such specialty clinics need to be run on modern lines with both free and paid clinics. Treatment for only one speciality should be offered at each clinic to maintain the focus. In that way thousands of patients from the paying as well as non-paying category will be definitely be inclined to visit the speciality clinics for chronic problems, even coming from out-of station. (Specialty clinics have been suggested under the chapter of Research because the councils were primarily set up to conduct research.)

## 3. Production of Formulations for Special Treatment Centres

The formulations that are provided at the proposed special treatment centres should be sourced from good manufacturers in the government or private sector and thorough oversight of raw material and processes followed. The Councils' staff has knowledge of drug formulation but in order to maintain supplies, it would be better to outsource the preparation of the drugs. High standards of packaging and labeling should the insisted upon.

## 4. Awareness about Speciality Treatment Centres

Funds should be set aside for an awareness campaign on the establishment of the proposed speciality treatment centres; also for providing information on the website and through printed brochures about the identified condition, the average time needed for treatment, the typical range of remission achieved, together with the location of the facility, the doctor's qualifications and experience, and the centre's contact details. Panchakarma procedures can be outsourced to accredited private facilities and practitioners but the Speciality Centre should retain overall responsibility for providing treatment.

## 5. Media Plan to Build Awareness

A government campaign that promotes these speciality treatment centres and assures the public about the quality of drugs and the competency of the ASU doctors manning the treatment centres would evoke a huge response. Therefore a phased programme has to be planned so that the services can cope with the demand. Funds need to be set aside for the media plan as well as for the engagement of professional staff with degrees in hospital administration or business management to run the front office and back end management of the free and paid clinics. In the report, the places where such speciality centres can be established without constructing or hiring new facilities has been indicated. While it should be possible to run the centres using the Councils' clinical research staff, the engagement of part-time consultants from among private-sector ASU practitioners may be considered (in addition), to be remunerated from the fees collected from paying patients in due course.

## 6. Patent route needs complete rethinking

The process of acquiring patents appears to have no significance because no industry has shown interest in using the research findings of CCRAS and CCRUM. The continuation of in-house clinical research should be phased out as this is not justified in terms of outcomes over three decades.

## 7. Modify aims and objectives of the Councils

The Department of AYUSH should consider altering the aims and objectives of CCRAS and CCRUM to assign the Councils a specific role in providing treatment for 6-8 identified conditions and running Speciality clinics for public benefit. This would benefit patients enormously because a wider public would know where to access ASU treatment for identified chronic conditions and government backing would give confidence.

## Education

### Focus of recommendations

The recommendations concerning the Education sector focus on the curriculum and syllabus prescribed by CCIM for the ASU colleges and matters related thereto. As explained in the introductory chapter on Education,issues related to provision of infrastructure and teaching faculty have not been commented upon as this is being directly monitored by Department of AYUSH.

Currently there are two sets of curricula in force for ASU's students. CCIM's website displays the new curriculum for UG, PG and postgraduate diploma courses 2010–11. The discussion is related to both the new and the "pre-existing" curricula (as it is referred to by CCIM.) The following recommendations have been made:

### 1. Orientation of the curricula

The curricula needs to set out explicitly what the student would learn in terms of theoretical knowledge and practical skills. The curricula also needs to state the precise role expected to be played by the ASU graduate in hospital settings, in the public health arena and in general practice. This would provide a context and a purpose for teaching individual subjects.

### 2. Learning objectives of curricula need to be clearly stated

A summary of how each subject integrates with earlier subjects already covered needs to be apparent from the syllabus. The teaching and learning methodology to be followed in the theory and practical classes, the method of internal assessment, and marks given for each segment of each paper needs to be spelt out in the curricula. The curriculum needs to clearly indicate the skills that would be taught. A perusal of the present curricula does not indicate this explicitly.

### 3. Need to build confidence in ASU practice through the curricula

A substantial section of students opt for the ASU courses as a fall-back not having gained admission into the MBBS course. Instead of leaving the students to find their own feet, it would be better to expose them in the very first year to the work of good practitioners so that they understand how the public is accessing ASU medicine and for what conditions. This would stimulate an interest in the subject. It would be useful to send the students to visit reputed ASU teaching institutions and private clinics so that they observe actual treatment in progress. It is necessary in the case of ASU to build curiosity about the systems. The ASU faculty has pointed out that didactic teaching from the ancient texts frustrates the students who come with a science background. It is also necessary to make the students understand that they are being prepared to become competent ASU practitioners, to pursue higher education in ASU and to support industry. Unless this is clarified at every step, the tendency to want to practice modern medicine at the cost of ASU will never reduce.

### *Discussion in brief about inclusion of modern medicine/allopathic practice*

The arguments for and against the inclusion of modern medicine in the ASU syllabus have been given extensively in the report along with references to Court judgments and state government orders that have determined the current policy on this. The report recognizes that both under NRHM and by virtue of special orders issued by certain state governments, ASU practitioners are permitted to prescribe modern medicine; but no one has spelt out whether that includes prescription of all Scheduled drugs and other interventions. There is no negative list on what ASU practitioners must not prescribe. Likewise there is no clarity about whether the ASU graduate is permitted to conduct interventions and procedures which are used in the casualities of hospitals and in general practice. Such orders need to issue explicitly so that the teaching of allopathic subjects has a relationship to the extent to which government policy expects the ASU graduate to contribute to the provision of such services. Only then can the curriculum bear a relationship to the role that the ASU graduate would be expected to play.

### 4. Recommendations relating to teaching of modern medicine

Assuming that it is the intention of the concerned state governments that ASU practitioners also practice modern medicine, the allopathic clinical subjects included in the syllabus need to be taught by modern medicine teachers. This shortcoming

needs to be confronted as the element of modern medicine in the ASU curriculum has increased with time.

Unless the students have adequate clinical exposure (patient-load) they cannot gain sufficient proficiency. In the present CCIM syllabus there are long lists of allopathic subjects. It is not clear which part of the syllabus is only for providing background knowledge and information to enable the practitioner to function alongside modern medicine practitioners, to understand modern diagnostics and to be able to discuss cases with treating physicians; alternately how much of the syllabus is for the ASU practitioner to actually practice modern medicine. This needs to be spelt out clearly to avoid the present situation when practitioners are making individual claims about what they can do. If government policy supports practice of modern medicine by ASU graduates, including selected interventions and procedures, these need to be listed and then the standard of teaching should not differ between allopathic and ASU Colleges in so far as these subjects are concerned.

### 5. Involvement of professional bodies in curriculum design by establishing a super arching body

Despite a large component of modern medicine subjects, CCIM does not appear to have taken inputs from professional organizations that are statutorily responsible for designing the curricula for modern medicine. This is a specialized area and special committees of Medical Council of India, the National Board of Examinations and the All India Institute of Medical Sciences (which prepares its own curricula under authority of an Act of Parliament,) debate at length about what should be included in the syllabus. From time to time the Department of Health have drawn the attention of the Medical Council of India to current priorities relating to public health, reproductive health and impending threats of pandemics to include those aspects in the curriculum. If the ASU graduate has to play a complementary and supplementary role in the provision of health services by additionally conducting modern practice, the responsibility for curriculum design should be entrusted to the proposed National Council for Human Resources in Health (NCHRH) or a similar body should be established for the AYUSH systems. This new entity should possess competency to design and regulate the modern part of AYUSH medical education in addition to the ASU content. CCIM was never established to prepare a syllabus for modern medicine. Simply listing conditions and procedures treated through modern medicine raises false expectations among ASU graduates and practitioners. With additional responsibilities entrusted to ASU practitioners by State Government a different approach to health manpower planning and curriculum design is needed, keeping court orders in view.

### 6. Sequencing of training and clarity about teaching methodologies

At present the curriculum content seems to be a mixture of methodologies with unnecessary repetition of subject content. The Ayurvedic and modern medicine contents have to be separated and the faculties of ASU and modern medicine should teach the subjects independent of one another but with proper sequencing. There is an acute shortage of allopathic teachers for certain subjects even in modern medicine colleges and therefore steps need to be taken by the medical education departments of the state governments that have permitted modern medicine practice to ASU practitioners to provide for classes to be taken by allopathic teachers. This has to be preceded by a statement of policy from the Department of AYUSH as medical education is on the concurrent list of the constitution

### 7. Bed strength and paucity of patients in ASU hospitals

The bed strength of ASU hospitals has been increased over the years but in several hospitals visited it was evident that the beds were underutilized. Most indoor patients were admitted for Panchakarma procedures related to musculoskeletal and neurological conditions for the most part. In surgery the admissions were mostly relating to the eye, ENT, and for conducting ano-rectal procedures – many of which are also OPD procedures. Most patients were examined by students in the OPD and not as hospitalized patients. The need for increasing so many beds in ASU hospitals needs to be re-examined with reference to whether the patients actually need admission, as government funds are used to run the public sector facilities. Bed strength has to be related to medical, surgical work that the ASU graduate is expected to perform and if the cross-

section of patients does not provide that exposure, increasing beds as an end in itself is not justified.

The National Institute of Ayurveda provides facilities for medical emergencies. It was not clear whether this was being provided because some patients may suddenly need emergency care or because NIA is willing to accept emergency cases from outside 24x7. There was also a chair for dentistry and a regular dentist was providing treatment. A view has to be taken on whether ASU colleges should start providing such interventions, presumably to attract patients and increase their own relevance. There is a need for a stated policy on this as supervision becomes very important once such facilities are opened up.

### 8. Sanskrit and Urdu

A policy decision needs to be taken about the present manner of inclusion of Sanskrit and Urdu. While knowledge of both the languages is definitely an asset, but this can also become a deterrent that prevents many aspirants who would like to join the AU courses from ever doing so. This kind of exclusion promotes insular thinking. The AU colleges would benefit immensely if students from the SAARC countries as well as other foreign students join these courses. A spirit of enquiry, a quest for knowledge and personal development would be the spin-offs of allowing students with different backgrounds to join the AU colleges. Therefore prior knowledge of Sanskrit and Urdu should not become an insurmountable hurdle. Special textbooks need to encapsulate all the verses and phrases which are of relevance to the student's professional understanding of the treatises and these should be taught by language teachers. Also special courses can be run for those who have no background, to bridge the gap.

### 9. Special ASU diploma and degree courses for MBBS doctors and postgraduates

As a policy, modern medicine doctors on completion of MBBS should be permitted to undergo a post-graduate ASU diploma course and a graduate course of two years duration for postgraduates, to learn ASU medicine. Modern medicine doctors working in specialized areas would find this an asset as they would be able to use the beneficial aspects of ASU medicine in conjunction with allopathic treatment. Such modern medicine doctors would be in a position to network with good facilities and competent ASU practitioners, helping patients thereby. This would be particularly meaningful in areas where there is a possibility of reducing the intake of drugs in specialized areas like diabetes, Parkinson's disease, musculo-skeletal and neurological problems and mental health illnesses. It would reduce the hubris that surrounds ASU in the mindset of modern medicine doctors. Up to five seats in each college can be kept aside for foreign students and modern medicine doctors, in colleges that are considered of a relatively high standard. But a beginning needs to be made because ASU medical education would gain through this cross-fertilization of minds and patients would feel comfortable with practitioners who have been educated in both systems.GAU has built up some experience in running online courses and a portion of the syllabus for modern medicine graduates and postgraduates can be run online to save time.

### 10. New textbooks, computers, teaching aids

It is very important to encourage the writing of new textbooks with multidisciplinary authorship. A budget needs to be set aside to commission the writing of good textbooks.

Agencies/suppliers can be identified for supply of hardware and software and specifications given to the government colleges so that they can directly indent for such items.

A list of teaching aids should be prescribed as essential for all colleges because a substantial part of the teaching was reported to be following rudimentary methods. The creation and use of audiovisuals, you-tube and video lectures needs to be encouraged. The website of Department of AYUSH and subsequently the new All India Institute of Ayurveda and the National Institutions should display the management of most procedures step-by-step.

### 11. Establish a decentralised agency for fund release and oversight

The Department of AYUSH should consider providing assistance for college upgradation by persuading the Universities of Health Sciences or a Board on the lines of the University Grants Commission to work as a conduit. This would obviate the possibility of late fund release by State Governments and involve the Universities that affiliate the colleges. Alternately this can be done

by requesting the Planning Commission to make funds alloted for college upgradation as non-divertible.

### 12. Developing competencies to treat geriatric problems and contemporary illnesses/ disabilities

Modern lifestyles are leading to new kinds of illnesses as well as disabilities and handicaps related to excessive use of computers, including painful syndromes, eyestrain and back and shoulder pain. Employees in computer related jobs are laid off because recovery is very slow.ASU has several therapies, massages and treatments like steaming, oil massage and cupping which are very useful. ASU uses non-invasive and plant-based remedies for dealing with skin problems like leucoderma, acne, facial hair and obesity. The practitioners in Kerala have perfected the regimen for bone setting and fracture healing non-invasively. The varma therapy which is a part of Siddha medicine undertakes expert manipulation to relieve acute stiffness e.g. frozen joints. These and many more conditions are affecting an increasing number of people. These skills need to be imparted to the ASU graduate because numerous people would like to avail of these services but they are not being taught uniformly with standard operating procedures (SOPs). The syllabus needs to give a thought to doing this in a uniform manner.

### 13. Funding ASU colleges

High-quality professional education alone would ensure that the practitioner remains relevant to the needs of the public. However standards of many ASU colleges are deficient and even some of the best State government colleges lack funds to be able to invest in even routine maintenance, leave alone renovation and modernization. The Department of AYUSH should make a selection of at least 15 colleges every year in the government sector that would benefit through an infusion of funds for specific activities. However it was found that even where upgradation had been sanctioned and undertaken the quality of work was poor. The colleges do not seem to have the wherewithal to be able to extract high-quality construction and maintenance work. Therefore as is done by the University of Delhi, a panel of architects should be empanelled centrally either by Department of AYUSH or by using the Hospital Services Consultancy Corporation. The colleges which are selected for receiving grants should be asked to get the work done through the identified architects. Consultants should be engaged for extending oversight over quality of work and timely completion as the use of government funds needs to be monitored. The selection of colleges in the government sector should start with those where the patient-load is relatively high so that investments are made where the public is likely to benefit, besides the students.

### 14. Paramedical and supporting staff in ASU hospitals

The practice of ASU necessarily requires the assistance of ASU pharmacists, Panchakarma and Ksharasutra technicians, laboratory technicians and assistants to manage the anatomy and physiology departments and herbariums. Nursing staff, ward boys and librarians are also needed. These are basic requirements for the efficient functioning of ASU colleges. The need for supporting staff should be recognized and normative standards need to be prescribed. At the time of inspection this aspect should receive due attention.

### 15. Certificate level courses

These need to be organised for supporting staff particularly panchakarma masseurs. Such courses are being run by some organisations but there is a need for trained people to be employed uniformly by all ASU colleges.

### 16. Recommendations regarding encouragement of ASU in Central universities

There should be a dialogue with the Central universities to create ASU departments particularly with a view to supporting interdisciplinary research. Only the Department of AYUSH is in a position to take this up as it is unlikely that individual colleges and departments would be able to do so. Without multidisciplinary involvement held in a collaborative manner, ASU will not be able to create a wider interest or generate respect for what the systems can offer. Today only a handful of social scientists are engaged in ASU research and they have little access to study the ongoing ASU work. There would be greater interest were Departments of ASU in Central universities to be established which study the social science and anthropological aspects of this sector.

### 17. Recommendations regarding ASU Degree eligibility for different courses and new openings

The ASU curriculum needs to be designed in a way that the products of an ASU education can also move laterally to join courses in different areas of agriculture, veterinary science, human behaviour and allied sciences, nutrition and dietetics, botany, ethnobotany, ecology and environmental sciences to name only a few. This would need to be planned well in advance in collaboration with university departments and possible employers. This is not something that CCIM is equipped to do. A centrally appointed committee with representation from ASU's non-clinical departments together with the relevant departments of Jawaharlal Nehru University, Benares Hindu University, Aligarh Muslim University, Jamia Hamdard and Environment, Agriculture and Veterinary Science universities and colleges need to come together to discuss how the outreach of ASU can be widened. The focus should not be the career interests of ASU students and practitioners but on how cross fertilisation can being the strengths of ASU to benefit several sectors.

### General recommendation on funding ASU colleges

- During the 12th plan the Department of AYUSH could consider persuading Ministry of HRD to set up a UGC like body or get the Universities of Health Sciences to agree to cater to ASU colleges. All funds could be routed through a newly formed AYUSH division of UGC or the State Health Science Universities so that there is uniformity as well as a check on proper utilization of funds. A beginning can be made with the Universities of Health Sciences in the states of Maharashtra and Karnataka which have the maximum colleges. While it is not the responsibility of the Central government to be funding government colleges in the States, looking at the neglect of even some of the best government colleges, an infusion of funds would be needed if they are to be brought to an acceptable professional standard.
- Funds should be set aside for the establishment of an educational portal or a Virtual Resource Centre including its updation and maintenance. This portal should cover the practical aspects of the ASU curriculum particularly where procedures have to be observed step-by-step. This can be given as a turnkey job either to C-DAC, NIC, EDUSTAT or IGNOU as they have adequate server space. A University of Health Sciences which sets up an independent division for AYUSH can be entrusted with the preparation of software. An advisory committee could oversee content clarity with educationalists, researchers and practitioners from leading institutions/universities like IPGT&RA, GAU, Benares Hindu University, NIA, Jaipur and AVS Kottaikal. It should not become the preserve of educationists from a single university or institution.
- In the 12th plan multiple contributing authors need to be persuaded to take up the design and publication of new textbooks in regional languages which should be funded. It should be compulsory for ASU colleges to purchase new books which are published. Department of AYUSH should make a plan provision to encourage the writing as well as support the purchase of textbooks by ASU colleges. An Agency like National Council of Education Research and Training (NCERT), National Book Trust (NBT) or the Raja Ram Mohan Roy Library, which regularly deal with publishers could be given a consultancy to commission textbooks based upon the advice of experts but written by people who know how textbooks should be organised. The Department could also give an annual grant to Government colleges to purchase new textbooks and also make all text books available on-line.

## Practice

### Recommendations regarding model for best clinical practice

The All India Institute of Ayurveda, New Delhi is patterened on the All India Institute of Medical Sciences. The focus of the Institute has to be steered from inception. The Institute should primarily be the focal point from where protocols for multidisciplinary therapeutic outcome studies are drawn up and examples of the best clinical practices carried out. It should have a strong full time Chief Executive Officer at this stage to oversee the infrastructural development and also to network with other institutes in the field of Ayurveda as well as other disciplines. At this point it would be better to position a non-practitioner as there is a huge need for attending to lateral linkages with several

agencies. The All India Institute of Medical Sciences and Indian Council of Medical Research both have full time Deputy Directors of Administration, who are IAS officers of Joint Secretary level. That is vitally needed here at this juncture to ensure that administration and co-ordination aspects are handled with resourcefulness.

**Hospitals providing Panchakarma and allied procedures:** The carrying capacity of the areas where patiets wait or undergo Panchakarma procedures in government hospitals need to be managed in a hygienic way. There is overcrowding in these areas which requires staggering of patient load. The housekeeping and hygiene standards need enormous upgradation. The Government facilities should be the first to try and get NABH accreditation. Funds should be earmarked for this so that State Government hospitals can be renovated and modernized starting with 10 hospitals in the first year. Instead of giving funds to the Hospital, the Dept of AYUSH should ask the Hospital Services Consultancy Organisation HSCC to work out turn-key contracts which can be funded through the Corporation once an MOU for handing over space is entered into.

**Government Dispensaries:** A comprehensive set of guidelines on what a government dispensary should essentially provide are needed. At least one model dispensary for either Ayurveda/Siddha or Unani should be there in one district in each state for others to visit and emulate. The local purchase of drugs needs to be facilitated so that there is no let-up in treatment which brings a bad name to the system and turns people away.

## Recommendations regarding Creation of Directories of Practitioners and Panchakarma Clinics

People who would like to try ASU treatment do not have an idea of the names of registered practitioners, their addresses or telephone numbers or other details – whether institutionally qualified or otherwise. It would therefore serve a public purpose if the AYUSH/ISM officials at the state level are given funding to have a city and district-wise Directory created and updated every year. The work can be outsourced or got done departmentally but such a Directory would give an idea of the range of practice and also give credibility to the work that is going on. There could be a disclaimer with the following wording:

Disclaimer: *"This Directory has been compiled to give information about ASU practitioners and clinics. The entry of any practitioner's or clinic's name does not reflect any government endorsement."*

## Recommendation regarding Protecting the Name of Ayurveda

It should be made mandatory for private clinics and indoor facilities to display (like a menu card) the therapies which would be provided, their duration and the oils and medication to be used from sealed bottles. In the absence of that a lot of gimmicks are being marketed in the name of Ayurveda. This needs collaborative action on the part of both the Ministry of Tourism and the Department of AYUSH. However the possibility of harassment has to be avoided by engaging an agency at the State level which is asked to provide guidance but maintain oversight. Guidelines need to issue on minimum standards for each procedure offered (time required and materials used). Kerala Government's green leaf scheme can be expanded.

## Recommendations regarding speciality clinics

Efforts should be made to include good centres for providing speciality treatment under the CGHS because that would give recognition and legitimacy to the work that is going on. To give an example if speciality clinics were approved both in the government and the private sector for skin diseases, asthma, liver problems and arthritis (Rheumatoid arthritis and Osteo arthritis) and the cost of the treatment is borne by CGHS, there would be several patients who would be interested. Although availing of Panchakarma treatment at recognised places has been approved, it would be better to include it as recognised treatment for post trauma/after stroke rehabilitation, chronic back pain, computer shoulder and carpal tunnel syndrome, eye problems and mental problems. These are growing challenges and there is a lot that ASU can do for these kinds of patients.

## Recommendations regarding employment opportunities for ASU practitioners

There were suggestions that ASU treatment should be introduced in Railway hospitals, in hospitals run for public sector enterprises, and in the dispensaries of IITs, IIMs, and other large Government institutions. Likewise in the medical facilities set up

by Central and State Universities. The Department of AYUSH should ask the State AYUSH Departments to draw up a panel of practitioners prepared on a city-wide basis after having the qualifications and competencies evaluated by a Board. The names could be given to large institutions starting with the Government sector, desirous of setting up a facility for ASU consultation.

### Recommendations regarding insurance cover for ASU treatment

The advice of the Insurance Regulatory Development Authority (IRDA) and medical Insurance Companies in the public and private sector should be taken about bringing specific ASU treatment under insurance cover. This should not be confined only to hospitalization; outpatient treatment for specific diseases based on a consumer preference survey may be included. To start with young people working in Call centres and jobs requiring constant computer work could be insured for syndromes that result in being laid off work. Similarly insurance cover may be extended on optional basis for diseases like Chikanguniya, chronic muskulo-skeletal problems and neurological conditions for which modern medicine has limited treatment. The modalities would require hospitals and practitioners to be recognized but the Government can act as a facilitator to start a dialogue between the facilities and insurance companies.

## Medicinal Plants

### Recommendations relating to 'Traditional and Folk Medicine'

**Institute for Trade in Medicinal Plants:** The Department of AYUSH should consider setting up an Institute for Trade in Medicinal Plants on the lines of Indian Institute for Foreign Trade (IIFT) to offer postgraduate diplomas and MBA qualifications for ASU graduates as well as those with backgrounds in agricultural sciences, botany and allied disciplines. The Institute should provide knowledge and skills required for managing trade and commerce in medicinal plants, including the sustainable export of cultivated produce. The objective would be to equip students to become proficient in the management of medicinal plant trade. The institute can also run certificate courses which provide competencies for sorting, grading, labelling and certification of medicinal plants.

The Governing Board of the proposed Institute can run like a Consortium where institutions like FRLHT and others that have excellent connections with local collectors of medicinal plants can contribute in a practical way. Such institutions can also see that aspects relating to protection of bio-diversity and sustainability are given due importance in the curriculum. Knowledge about identification of plants banned from export or which are becoming extinct should also be imparted, so that products of these institutions can offer consultancies or join customs' offices and ASU drug regulatory and quality control positions both in the public and private sector. The Institute should build capacity for operating the proposed medicinal plants database with unique product codes for both classical and proprietary drugs. Students should be given professional know-how on administering and implementing bar coding requirements and for handling import and export of raw drugs at customs.

The Institute can have a tie-up with industry for creating competencies for trading in processed medicinal plants for internal use as well as for export. The students can also be trained to undertake demand supply analysis of medicinal plants and forecast international trends for consumption of raw and processed drugs.

**Division of Tribal & Folk Medicine:** There should be a division for Tribal & Folk medicine in the proposed Institute.CCRAS and CCRUM should not stop with the publication of monographs and storage of survey data and herbarium sheets. These should be made accessible to students from various disciplines attending courses in the proposed Institute. In particular, students of botany and allied subjects should be given access to the specimens that have been stored in survey units at 22 places in the country. A protocol should be designed and University Departments of Botany, Agriculture, Anthropology, etc. should be encouraged to organize visits of college students to selected units. During the 12th plan, efforts could be made to upgrade at least five such units and to make them capable of imparting practical knowledge. These units can in due course become satellite centres of the proposed Institute.

### Recommendation relating to 'Raw Drug Trade'

**Management of Raw drugs Trade:** In the 12th Plan, looking at the general conditions in the market, there would need to be a complete overhaul of the

management of raw drugs because that is fundamental and critical to the quality of medicine. Although suggestions made by the raw drug dealers are correct in their own place, simply upgrading one part of the supply chain will not yield much result. While registration of the traders should be undertaken, certain non-negotiable requirements should be made mandatory for industry to follow when they purchase the raw drugs. In the ultimate analysis the supply chain itself would have to be examined link by link to introduce checks that ensure that there is minimal scope for substitution, impurities and loss of quality in transit and storage.

### Recommendations relating to 'Demand and Supply of Raw Drugs'

- **All crude drugs need to be given unique identification (ID) codes:** It should be made mandatory for suppliers and manufacturers to label a particular raw material by its assigned codes. This would also ensure that quality raw materials and supplied to physicians and industry.
- **Adopt successful systems/processes of other countries:** There is a need to learn from countries like China, Thailand, Korea and Japan, who manage their raw material collection, drying, storage and packaging in ways that ensure that the raw material is free from microbial and fungal contamination when supplied to the end users. China exports quality assured raw material all over the world. Best practices in post-harvesting technology, low temperature moisture free godowns, including installation of processors for hygienic packaging should be introduced with the assistance of expert institutions that have been using such devices for grading, packaging and storing other commodities.
- **Bar coding:** In due course this database can be used for linking manufactured products to bar codes which should be made mandatory.
- **Need to establish a Federation to support collection/ transportation and grading of medicinal plants:** Most State Medicinal Plants Boards do not have the clout or wherewithal to coordinate this work. It would be better to initially outsource this work to established organisations like the Horticulture Board, Spices Board or to any organisations that has set up a supply chain. In the long term NMPB should set up a Federation which can organise this work on a continuous basis.
- **General Recommendation:** Unless the approach for collection, grading and storage of raw material is handled professionally India will lose the opportunity to sell high quality products or to export raw drugs in a planned and sustainable manner. Therefore this needs to be given high priority in the 12th plan but it is important to leverage the strength of existing organisations, instead of waiting until NMPB is able to upgrade itself incrementally.

## Drugs

### I. Recommendations Relating to Manufacture of ASU Drugs and Quality Assurance

#### *Quality of raw material*

Steps should be taken to develop up-to-date quality specifications for plant material and minerals and to introduce bar-coding/ pharmacognostic image analysis for the identification of raw and processed ingredients. These are broader globally accepted quality parameters and they need to be adopted to cover all the 960 items of plant material that are traded and used by the ASU industry. It is expected that this work would be done by the autonomous ASU pharmacopoeia commission which has been approved to be established.

#### *Recommendations to review current needs of the GMP compliance*

It may not be possible to ensure that all the manufacturers get GMP compliance because they have not done it for the last nine years. Forty percent of the manufacturing units appear to be operating without GMP and producing drugs for sale to the public. These drugs can be harmful as they may contain raw material containing impurities, strong chemicals and non-permissible substances. The drugs containing metals and minerals can cause long-lasting harm when used indiscriminately. The public interest demands that such items are not allowed in retail sale in the name of medicine unless tested.

#### *Recommendations regarding new category of traditional processors*

A new category of Traditional Processors/Bheshaja

Kalpana producers who can only produce drugs to be supplied to practitioners or their own clientele but not for sale in retail outlets should be created. The responsibilities of the practitioner are recognized under the D& C Act and he is allowed to formulate ASU medicine. Today hardly any practitioner does this by hand himself. The work is outsourced to people who process the drugs as demanded by the practitioners.The recommendation is, therefore, to give recognition and legitimacy to this activity which is already permitted under law but to distinguish it from 'manufacture'.

### *Traditional processor can run OPD/IPD for his patients*

If the traditional processor runs his own OPD or engages a physician to diagnose and treat patients and to prescribe medicines made in his pharmacy, there is no harm. Therefore there is no need to close down such small units which in their own way are the only vestiges left of tradition. No processor who is selling small quantities for use by practitioners would be interested in deliberately adulterating raw material or selling spurious drugs because sooner or later the clientele would stop using the drugs. In the chapter on practice, there is a description of several ASU practitioners who are dispensing medicine made by their own pharmacies. This should not be discouraged but the responsibility for quality would remain that of the practitioner supplying the drugs.

### *Recommendation on retail sale*

Only GMP compliant units should be allowed to sell in retail in ASU shops or in regular chemists' shops. Special registration should be given for shops that stock GMP licenced ASU medicine. A small fee should be collected for such registration and the public encouraged to look for the GMP mark/number. That is the only way of protecting the consumer who has no way of knowing how to distinguish quality products which adhere to GMP and pharmacopoeia standards and those which do not.

### *Recommendation on enforcement of GMP*

For manufacturers who wish to sell their products in the retail market or act as stockists of ASU medicine, a GMP certification number should form a part of the label as a legal requirement. If even a few cases of non-compliance are prosecuted each year in each state, the manufacturers will become conscious of the need to comply. Moreover, if only GMP compliant manufacturers' products are allowed to be sold in retail, they would be obliged to obtain GMP. This should be projected as a means to protect the public and not as a means to rein in manufacturers.

### *Disposal of court cases*

It has been the experience of some state FDA's like Maharashtra that cases relating to spurious/ unlicenced/adulterated drugs take even more than 15 years to be decided and therefore there is no fear of the law. A review of the number of cases charged in courts and their progress needs to be made by every state AYUSH Department. Long term pendency of cases need to be taken up with the Registrars of the High Courts by the State Secretaries in charge of AYUSH and monitored centrally to keep up the pressure in public interest.

### *Recommendations on harmonized licensing system*

Presently there is no uniformity in the way applications are entertained for grant of license for the production of P & P or classical medicine. The following recommendations are made:

- There should be a uniform licensing system for adoption across the States based on technical data submission which can be called a dossier approach. A dossier was suggested by one of the drug manufacturers' associations and the copy is at Annexure-II.
- In respect of classical medicine, the system followed by other countries of having a pre-market notification would be far more efficient. In that case if the manufacturer already has a license for the production of a particular dosage form (Asava, Arishta, Ghrita,) he needs to only notify the licensing authority when he adds one more item. This is because there is no mind application involved in accepting the license application in respect of classical products as the recipe given in the classical text has to be followed invariably.

### *Recommendations to expand or alter the QCI Scheme*

Presently according to Manufacturers' Association, the QCI Scheme does not seem to have taken off

as consumers are unaware of what it denotes. Manufacturers complain that the certification is given product wise and since numerous products are made by each company, it is not cost-effective to seek QCI certification for each product. However consumers of ASU medicine need to be assured of the following:-

(i) That the drugs do not contain contaminants and impurities beyond permissible levels.

(ii) That the metallic and mineral content does not exceed permissible limits

(iii) That there is no addition of chemicals on non-permissible substances (like corticosteroids or synthetic anti-inflammatory agents).

Items (i) and (iii) above can be tested through HPLC/HPTLC testing which can test the presence and absence of impurities and additives. Any manufacturer who obtains a certificate showing that the drug is free from contaminants, microbial presence specified adulterants and chemicals, can obtain an AYUSH mark from QCI approved third party certification agencies. Testing charges should be settled annually by D/o AYUSH at the Centre and the label of such ASU products which meet all these test requirements could have a specified logo "AYUSH mark": "Quality Certified".

### *Recommendations on heavy metal testing*

An Inductively Coupled Plasma Analyzer (ICPA) is capable of testing the presence of all the Heavy metals like arsenic, mercury, lead, cadmium, zinc, copper etc. in one sample, with only one injection. This equipment should be provided to at least 10 laboratories to start with at a cost of approximately Rs 80 lakh per laboratory. Obtaining certification should be made mandatory for all herbo-mineral and metal based ASU products. For Bhasmas, Rasa Aushadis (Metals/ Herbo-metal/Mineral preparations) the label should say "This product contains Metals & Minerals used in ASU medicine upto permissible levels". Such products containing minerals and metals should not be allowed to be sold in retail without certification.

### *Recommendations to permit branding of classical medicines*

Branding of classical products should be allowed as this will promote more research and development on the efficacy of the original textual recipes. This would be in consumer interest.

### *Recommendations on new categories of ASU drugs*

While it is a welcome step that new categories have been introduced for supplements, cosmetics etc. there is a need to review the accompanying regulations. The Regulations should help the consumer understand the proportion of plant based/herbal material used in the product.

### *Recommendations to create a new category of ASU modern drugs based upon scientific data*

When the use of modern technology of extraction/concentration/fractionation is used to present new dosage forms using the knowledge contained in ASU, a new category called **modern ASU drugs** can be introduced. Far from taking away from the strength of Ayurveda, it will enhance the reputation of the systems.

### *Recommendations to provide incentives to promote use of cultivated raw materials*

150% Income Tax exemption on the purchase value of cultivated raw materials and 100% exemption from CST (Central Sales Tax, 4%) may be given on purchase of plant-based raw materials from cultivated sources. MODVAT credit of 40% should be given on the cost of purchase of cultivated raw materials. This will need to be argued at the time of Budget formulation with Ministry of Finance.

## II. Recommendations Relating to Consumer Preference for ASU Products

### *Consumer information*

It is apparent that people largely access ASU medicine for specific diseases and conditions. Much more information should be made available about the different modes of administration of drugs for such conditions, the reason why drugs are prescribed choosing so many different dosage forms and how they work not only on the disease but also on addressing the root cause of imbalance. The Department of AYUSH website should provide basic information about the conditions for which the public is predominantly buying the drugs. The prototype of the information needs to be placed on the websites of the State AYUSH Departments. There should be a section called Consumer Information as well as Frequently Asked Questions (FAQs) which can focus upon the identified conditions – system wise, where the using public has shown almost universal interest.

### *Capacity building through District ASU officers*

In view of the fact that drugs seem to be sold mainly on the repeated prescription data handled by the shopkeepers, it is very necessary to build up the capacity of both practitioners and shop owners. The State and District ASU officers need to be given standard material which they can share through workshops and training programmes with practitioners, shop owners and stockists so that at least for the most popular areas where public relies on ASU medicine, confidence levels are built up and there is uniformity in approach. This is necessary because people get turned off by an absence of knowledge. In the Dipstick survey of common preference, shopkeepers had asked for this know how to be given to them.

### *Essential drug list*

Since most of the drugs are accessed on prescription, it is very necessary that the practitioners are made aware at the city and district level about the quality, safety and efficacy aspects of the drugs. They should be given the list of essential classical drugs which are considered appropriate for given conditions – not in the nature of the drug regimen but so that they receive general guidance.

### *Labeling requirement*

Since consumers are concerned about quality and safety issues, they need to be guided through television programmes, brochures and leaflets about how to look for good quality. This aspect has to be centralized. The need for proper labeling has been dealt with under the drugs chapter where specific suggestions have been made.

### *Commoditization of ASU drugs and products*

The restriction on branding of classical drugs, classical medicine has reduced the sale of classical drugs to hardly 10% of the market. An awareness campaign has to be built up so that the public is aware of the difference between classical and propriety products and the difference between different modes of administration and how each works. In addition, the fact that ASU medication works only if a good practitioner has diagnosed the problem and prescribed *Prakriti / Mizaj* appropriate drugs has to be highlighted. Whereas it will not be possible for the government to stop aggressive marketing of company names, what to look for when buying products is something that should be promoted through a central campaign.

## III. Recommendation Relating to Dipstick Survey of Industries Manufacturing ASU Products

### *Recommendations on making the licensing procedure transparent and uniform*

- The website of the State Government should indicate the number of licensed manufacturers and number of products licensed in respect of each manufacturer.
- The number of survey/statutory samples obtained and the number of licenses cancelled/ suspended and prosecutions launched should be updated on the website of the state ISM departments and the office of the State Drugs controller. Regular news items should be given to Pharmabiz and similar publications. At present neither industry, shopkeepers or consumers have any faith that even rudimentary surveillance is being maintained.
- Failure to update information on new licences issued and cancelled should be monitored and an official engaged on contract and positioned under Pharmacopoeial Laboratory for Indiam Medicine (PLIM) with exclusive charge for follow-up with individual states. Exception reports of non furnishing of data should be sent to Department of AYUSH which in turn can alert the Directors of ISM / AYUSH in the States that information has not been updated in time. This would ensure that survey and statutory samples are collected regularly and updated which will keep up the pressure on the State licnencing/drugs control authorities.

### *Recommendations on implementation of pharmacopoeial standards*

Pharmacopeial standards are mandatory but during discussion with representatives of industry there was an admission that pharmacopoeial standards remained on paper and in the absence of enforcement it was optional whether to follow the standards prescribed. Therefore, the lifting of a prescribed number of survey / statutory samples should be strictly followed by the drug inspectors.

- Raw materials stacked by the manufacturers. Plant material loses efficacy over time. Therefore new regulations need to be

introduced under the Drugs and Cosmetics Act asking for packaged, source certified raw materials to be used with a best before date.

- Every invoice should be accompanied by test reports and source of origin of raw material. This practice is very common in pharmaceutical industry and should not result in any harassment.
- Quality tested raw material with Certificate of Analysis as per API should be the medium-term aim. State Forest Corporations may also be encouraged to provide certified quality raw material as per API.
- A Scheme for registration of vendors (raw material traders) supplying ingredients to ASU drug manufacturers should be introduced and manufacturers asked to maintain vendor data.
- The QCI certificate is very expensive and very few manufacturers are likely to opt for getting the certification. It would be better to start a simpler scheme for certification, for products which have been subjected to tests in recognized laboratories and which conform to packaging and labelling requirements as laid down.
- The quality mark should be publicized and consumers advised to look for the mark as was done in the case of the ISI mark in its formative years. Manufacturers could be given a limited window of two years to get the mark before the awareness campaign for consumers is put into action. A formal tie up with Department of Consumer Affairs would help.
- **Publication of advertisements about magical cures and misleading claims:** This needs to be taken up with the Press Council of India and publishers of newspapers and magazines. State governments should be asked to engage college interns who can go through English and vernacular newspapers and prepare monthly lists of newspapers which break the law. The State Health/ ISM secretaries should be encouraged to take this up officially with the publishers in the case of regional newspapers and magazines. This should be received frequently at a central level as it is one of the major factors affecting the reputation of ASU practice and drugs.
- **Consumer Forum:** A consumer Forum should be set up State-wise in co-ordination with Department of Consumer Affairs so that issues like medical service by practitioners, quality of drugs (fulfilment of pre-testing and labeling requirements) are given prominence. The awareness compaign for ASU treatment and drugs can be a part of the common awareness compaigns already undertaken by Department of Consumer Affairs on television.
- **Whom to Contact:** A "Whom to Contact" in case suspicious products have to be reported should be prominently available on the AYUSH and State ISM websites along with a helpline numbers accessible at district level, Toll Free. No such facility is presently available.

## Epilogue

The recommendations in the epilogue are in the nature of a futuristic vision. They fall outside the main Report and are summarised here as follows:

- Consider the establishment of an over-arching commission to pursue the propagation and globalisation of Ayurveda with a standing secretariat.
- Abandon the college education route to popularise Ayurveda abroad; instead focus on demonstrating the effectiveness of *Panchakarma* for specific conditions; as a precursor to seeking recognition on the lines of Chinese acupuncture.
- Make efforts to corner research funding from US bodies as China has done, in the areas of current medical concern, not drug research.
- Invest in opening Indian medicine PhD's in modern medicine to create allies and collaborators who can bolster clinical research.

# 1

# Historical Perspective

# Historical Perspective


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# 1

# Historical Perspective 1812–2003

## Introduction

Ayurveda, Unani and Siddha systems of medicine have a long history which dates back to centuries gone by – even millennia. The historical perspective which follows reflects on relatively recent developments from around the beginning of the 19th century onwards. This period has been selected to give an idea of the historical landmarks and policy debates that led to the evolution of Ayurveda, Unani and Siddha systems of medicine and have greatly influenced the manner in which they are taught and practised today. The background also shows how the attitudes and approaches of the government and the protagonists of the three systems responded to the changing times, including the interface with modern medicine, leading to new ways of packaging and presenting Indian medicine, now called AYUSH.

## Background

Prior to British supremacy the Indian systems of medicine had an independent cultural ethos and ideology and were the mainstay of medical and health care. They were not influenced by political upheavals and nor did they depend on state patronization- although it was often extended by the Mughal dynasty and later by several provincial rulers after the decline of the Mughal Empire. Although Ayurveda and Unani had their own ancient historical roots and shared little in common, they functioned in an environment of mutual trust and understanding.

After the British made political inroads into India, the ideologies of liberalism and utilitarianism began to percolate into the Indian mindset. In the case of the Indian Systems of Medicine (ISM), after a supportive beginning from the British rulers, there came a conscious effort to subdue the practitioners under the hegemony of colonial domination.

The early phase of co-existence between the protagonists of western medicine and Indian medicine ended with Lord Thomas Babington Macaulay's[1] famous minute on education (1835) in which he expressed the superiority of the "Occidental system" over the "Orientalist tradition" in the following words:

> "It is impossible to conquer India unless we break the very backbone of this nation which is her spiritual and cultural heritage. Therefore, I propose that we replace her centuries old education system with English education; this way the Indians would loose self-esteem and would become a truly dominated nation".[2]

This development is seen by historians as the "defeat of the Orientlists at the hand of the Anglicists." Thereafter, Government policies and actions proceeded to support strategies that aimed at marginalizing Indian medicine and its practitioners. Almost everything that had roots in the orient was relegated to the vestige of superstition and consequently treated as redundant.

During the last phase of the nineteenth century there was a reaction to this attempt at subjugation which ironically resulted in giving impetus to the revitalization of Ayurvedic and Unani medicine. But a really favorable environment for the systems came only after independence.

Moreover, the exposure to Western medicine also affected the practitioners. Several Ayurvedic physicians moved away from their traditional moorings to assimilate whatever could be gleaned from the new medical approaches. Charles Leslie considered a doyen in this area and the author of

1. Thomas Babington Macaulay (1800-1859) was a Whig politician, a poet and a historian. He was the first law member of Governor-General's council and an ardent advocate of English education over the vernacular.
2. Lord Macaulay's speech in the British Parliament, 2.2.1835.

"Asian Medical Systems" has described the phenomenon in the following words:

> "It is evident that indigenous practitioners did not lack the will and ability to incorporate knowledge from other systems with which they came into contact."[3]

## Ayurveda – An Overview

When modern medical science was introduced in India, it was inevitable that like many other institutions Indian medicine especially Ayurveda would also be affected.

### Ayurveda: The Stage of Transformation

After 1812, the British government required that 'native doctors' acquire training to enable them to provide medical services to the community.

Instead of the usual methods of apprenticeship it became necessary to introduce a more systematic way of imparting medical education.

Anil Kumar in his work on Indian Medicine has observed "the then Medical Board was impressed with the richness of the Sanskrit language and especially the unrevealing of some excellent treatises on Ayurvedic medicine by the orientalists."[4]

Therefore, in 1822 the government established a novel medical institution called the "Native Medical Institution" where western and Indian traditional medical education was to be imparted side by side.

During the same period Ayurvedic teaching in Sanskrit commenced in the Calcutta Sanskrit College and others followed.

The new institutions saw an amalgamation of Indian as well as western medical thought and practice for the first time. There are substantial records of European doctors, botanists and pharmacologists, listing the flora, fauna and other natural and medicinal resources of India. It is significant to note that together with an appreciation of the knowledge of plants and their uses derived from the Indian systems of medicine, there was an attempt to apply this knowledge for the containment of newly emerging diseases sought to be tackled through bio-medicine.

Thus, a 'Materia Medica of Hindoostan' by Whitelaw Ainslie appeared in 1813 and Sir William Jones' "Botanical observations on select Indian plants" appeared around 1790-1800 A.D.

Cantonment hospitals had limited resources which also necessitated placing reliance on local systems of medicine. This led to their limited incorporation in the early years more as a necessity than a conscious choice.

The founding of the Native Medical Institution (1822) followed by the Calcutta Sanskrit College and the Calcutta Madarsa, where parallel instruction was imparted in the vernacular, are examples of what was happening The intention was to train "natives' in medicine and also to use them to help run the medical services which were expanding.

At the same time, the British government realized the 'economic importance' of the drugs used in the Indian systems of medicine. It was the high comparative cost of European and "native" medicine which persuaded the Department responsible for Medical Stores to argue in favour of the use of local medicine.

To quote Madhulika Banerjee, "a drug substitution policy of European drugs by indigenous ones was initiated. This way the supply of European medicine could be limited to just those medicines for which no native drugs could be used."[5]

### Ayurveda: The Stage of Rejection

The incompatibility of the two systems of medicine, western and Indian led to a sharp division in thinking. The Native Medical Institution established in 1822 was abolished in 1835 and replaced by a modern medical college. The political developments in Britain also had a profound effect on the future of Indian medicine. The Medical Registration Act of 1853 and the setting up of the 'General Medical Council' were precursors for more changes to follow.

3. Leslie, Charles. *Asian Medical Systems: A Comparative Study.* Delhi: Motilal Banarsidas, 1998.
4. Kumar, Anil. *Medicine and the Raj: British Medical Policy in India – 1835-1911.* New Delhi: Sage Publications, 1998.
5. Banerjee, Madhulika. *Power, Knowledge, Medicine: Ayurvedic Pharmaceuticals at Home and in the World.* Hyderabad: Orient Blackswan, 2009.

Initially, although registration of medical practitioners had begun in Britain, the government dropped plans to register western medicine doctors in India, fearing an outcry from the Vaidyas and Hakims. Moreover, the focus of Western medicine as practiced in India was initially on tropical medicine, epidemiology and vector control. The new approach impressed educated Indians who became curious about these developments.

But along with this came a change in attitude towards Indian medicine. Indeed what has been described as the "tool of empire" by KN Pannikar[6] became a means of breaking social dependence on Indian Medicine by directing attention and curiosity towards western medicine.

### Ayurveda: Marginalization through Legislation

Although initially the British Government had been reluctant to insist on the registration of the western medical practitioners on the lines of what was already in vogue in Britain, in 1912 the proposal received approval with the enactment of the Bombay Medical Registration Act.

Such a policy that gave no recognition to the Vaidyas and Hakims was considered oppressive by protagonists of Indian medicine.

### Ayurveda: The Stage of Revitalization

Measures had perforce to be introduced to overcome what was happening. The dissemination of knowledge available in the classics was the first focus of the revitalization movement. The availability of printing presses made that achievable. By the end of the 19th century there were as many as fifty medical journals in various Indian languages.

An important contributor in this area was PS Varier[7] who published a catalogue of Ayurvedic medicines with details of their usage dosage and related information to enable people to access medicine without the prescription of physicians.

In support of this, *Chikitsa Sangraham* was written by Varier to spread awareness about the basics of the Ayurvedic medicine and treatment. His fortnightly journal '*Dhanwantari*' was considered particularly important as the essays focused on the promotion of good health.

Varier wrote a number of articles where he argued for selective adoption of ideas from both western and Indian systems. His thrust was based on the belief that Ayurveda as a medical system had relevance because it addressed medical needs which were directly related to climatic conditions prevalent in India.

He is also credited for establishing a system of public education and examination for Ayurvedic practitioners in Kerala. Such institutions were called "Pathashalas" (elementary schools) and the aim was to revive Ayurveda, to equip the physician with sufficient knowledge and skills to conduct practice: but it was also a means of apprising the British government about these new strategies.

The 'Pathashala' adopted a five year course with Sanskrit in the first year and later both Malyalam and Sanskrit as the medium of instruction. The curriculum of the Pathashala comprised both indigenous and western knowledge. The emphasis was on mastering Ayurvedic texts as well as acquiring knowledge about formulations and their medicinal uses. This was supplemented with instruction covering physiology, anatomy chemistry, midwifery and surgery which were incorporated from the western system.

This approach gave rise to two distinct points of view: the first was represented by the 'Purists' who resented any move to make a variation from the classical approach. They wanted the curriculum to be exclusively confined to the classical texts and commentaries.

In contrast the 'Modernists' placed greater reliance on western knowledge, particularly on anatomy and physiology.

## Promotion of Ayurvedic Knowledge

Inspired by the efforts of PS Variar, other places in India also saw the emergence of many other institutions which aspired to promote Ayurvedic knowledge.

6. Pannikkar, *op.cit.*
7. Vaidyaratnam PS Varier was an Ayurvedic physician from Kerala, India who in 1902 founded Kottakal Arya Vaidya Sala, an organization that started the manufacture and sale of Ayurvedic medicines.

The inauguration of 'All India Ayurveda Mahamandal and Vidyapeeth' which conducted courses like diploma and degree in Ayurveda, was another effort to legitimise Ayurvedic education.

Another landmark was the setting up of Ashtanga Ayurveda College (1915) in Calcutta by Jamini Bhushan Ray a famous physician and *'kabiraja'* (ayurvedic practitioner.) The foundation stone of Ray's institution was laid by Mahatma Gandhi.

Soon thereafter, Vaidya Shyamdas established the Vaidya Shastra Pitha in 1921 to teach 'Shuddha' (Pure) Ayurveda which was inaugurated by Dr. Rajendra Prasad.

'Kabiraja' Gananath Sen started the Govinda Sudan Ayurvedic College in 1922 in Calcutta. The Ayurveda Maha-Vidyalaya came up in 1932 also in Calcutta and was inaugurated by C.V. Raman an institution where Ayurveda and allopathy were taught side by side.

The All-India Ayurveda Mahasammelan, an Association of Ayurvedic physicians was formed in 1907 at Nashik (Maharashtra).

Likewise, in 1915 a college for Indian system of medicine was established at Madras where subjects like anatomy physiology, hygiene, medicine and surgery were included in the syllabus and the Degree of Licentiate of Integrated Medicine (LIM) was awarded.

## Checkered Attitudes to Ayurveda

Inevitably the spirit of Nationalism and the quest for credibility for Ayurveda united. In 1918 the Indian National Congress passed a resolution which criticized the way the indigenous systems of Medicine were being denigrated by "Laymen Antagonists" without the practitioners even being able to present their case.

From 1920 onwards the demand for extending patronage to Ayurveda grew. Under pressure, the provincial governments granted assistance to Sanskrit Mahavidyalayas imparting instruction in Ayurveda. During this period a number of provincial governments passed legislation regulating indigenous medicine. But interestingly, when the Indian Medical Association (IMA) was formed in 1928, it concentrated exclusively on Western Medicine. Formed under pressure of the General Medical Council in Britain it had close links with the Indian political leaders and important doctors in India but even so the interests of Indian Medicine were side-stepped. The allopathic medical profession's general aversion to Indian Medicine is apparent even today although winds of change are also felt at a few places.

Policy-makers and planners in the health sector that were in the forefront in the colonial and post colonial period were clearly opposed to the inclusion of traditional medicine .This was evident from the recommendations made by the Sub-Committee of the National Planning Committee (1938) which was entrusted with drawing up a plan for health services for independent India. It was significant that the Sub-Committee wanted to setup "health workers" for rural India but the integration of the vaidyas and hakims was recommended to be done only a "after additional training" had been imparted to them.

## Gandhi's Viewpoint on Ayurveda

Madhulika Bannerjee has summarized Mahatma Gandhi's viewpoint on Ayurveda which holds relevance even today. Her assessment[8] is as follows:

(i) For Gandhi, Ayurveda did not exhibit a spirit of inquiry and humility to the unknown, similar to that of modern science,

(ii) The second criticism of Gandhi related to the commercial aspects of Ayurveda where the main focus was upon the sale of tonics and sexual stimulants. Gandhi regretted that no association or person protested against this trend as being immoral and unethical,

(iii) Gandhi also regretted that Ayurveda was neither cheap nor efficacious. Nonetheless he supported Pandit Shiv Sharma, the Vaidya who treated him at the Sevagram Ashram, to help propagate Ayurveda if he was assured that the vehicle adopted for this purpose was that of a "true practitioner".

In 1921, while inaugurating the Tibbia College at Delhi, this is what Mahatma Gandhi said:

> "I regret to have to record my opinion based on considerable experience that our Hakims and Vaidyas not exhibit that spirit

8. Banerjee*, op. cit.*

> of research in any mentionable degree. They follow without question formulas. They carry on little investigation. The condition of indigenous medicine is truly deplorable. Not having kept abreast of modern research, their profession has fallen largely into disrepute. I am hoping that this college will try to remedy this grave defect and restore Ayurvedic and Unani medical science to its pristine glory. I am glad, therefore, that this institution has its western wing." (CW 19: 357-58).[9]

Speaking at another event in 1925 he is reported to have criticized "large-scale advertisements primarily of Ayurvedic tonics as sexual stimulants aimed at resting on the laurels of Ayurveda without conducting genuine research."

He also said, "I know of not a single discovery or invention of any importance on the part of Ayurvedic physicians as against a brilliant array of discoveries and inventions which western physicians and surgeons boast."

When some Vaidyas were upset with Gandhi's response, he retorted,

> "I do like everything that is ancient and noble, but I utterly dislike a parody of it. And I must respectfully refuse to believe that ancient books are the last word on the matters treated in them. As a wise heir to the ancients, I am desirous of adding to and enriching the legacy inherited by us." (CW 27: 344).[10]

## Unani – An Overview

In undivided India, especially during the Mughal period, Unani medicine enjoyed remarkable state support and also had great public acceptance. This environment was conducive to attracting practitioners towards Unani medicine including from abroad. Even after the disintegration of the Mughal empire, Unani medicine and its practitioners were extended patronage by the princely states that emerged after the downfall of the Mughal empire and subsequent events. It was only in the second half of the nineteenth century that votaries of Unani medicine became aware of modern medicine emerging as an effective tool for colonial domination. Interestingly, they did not hesitate to learn from some of the recent developments in European medicine – mainly surgery, anatomy and chemistry – especially since they considered 'Doctory' (allopathic practice) to be an off-shoot of their own Unani system.

Through their responses and critiques of Doctory, historian Neshat Quaiser has broadly divided the practitioners and users of Unani into four groups:

1. The **Modernists,** who accepted modern Western medicine as the only true and valid medical science and thereby rejected the indigenous systems of medicine.
2. The **Purists,** who rejected the basics of Doctory and upheld the view that Unani tibb was most suited for the treatment of human beings. The physicians of the Lucknow School, represented primarily by the Azizi family were the most vocal advocates of this view.
3. The **Synthetists,** who accepted modern medicine as the most developed scientific system of knowledge and yet remained quite concerned and sympathetic to Unani tibb. Such people suggested a combination- a medical unity of the three – Unani, Ayurveda and Doctory i.e., *Tibbi Ittehad-e-Sulasa.*
4. The **Reformists,** who insisted on reforming the Unani system by adopting 'scientific' methods and its form (including packaging) but not on changing the fundamentals of the system.[11]

The Delhi School of Unani Tibb represented primarily by the Sharifi family which established the first Madrasa-e-Tibbia (1889), a formal medical school to teach the Unani system, was the most vocal supporter of this view.[12]

Quaiser argued that, "The votaries of the Unani system adopted all possible methods to revive their medical tradition through the Madrasa-e Tibbia set up at Delhi. The All India Vedic and Unani Tibbi

9. Prasad, Shambhu. "Towards an Understanding of Gandhi's Views on Science." *Economic and Political Weekly,* September 29, 2002. (Based on *Collected Works of Mahatma Gandhi.* New Delhi: Publication Division, Ministry of Information and Broadcasting, Government of India,1994.)
10. *Ibid.*
11. Quaiser, Neshat. "Politics, Culture and Colonialism: Unani's Debate with *Doctory."* In *Health, Medicine and Empire: Perspectives on Colonial India,* edited by B. Pati and Mark Harrison. Hyderabad: Orient Longman, 2001.
12. *Ibid.*

Conference held its first annual conclave in 1910 at Delhi. It marked the beginning of a concerted plan to bring together the two systems viz., Unani and Ayurveda to fight the onslaught of modern medicine."[13]

The 'profit-making' motive of the colonial government was also questioned during the 'Unani-Doctory' debate. It was argued that the English destroyed Unani tibb so that allopathy could be popularized and medicines from Europe and America could flood the Indian market.

Lack of governmental encouragement to Unani education and jobs for hakims were additional factors which discouraged the spread of Unani education. Many of them suggested that there should be a combination of doctory and Unani Tibb which they thought would ensure government support, while others emphasized greater reliance on their own resources. Overall, the Unani system tried to mitigate the colonial influence which questioned its theory and practice. Having understood the realities of the colonial game-plan it forged an alliance with Ayurveda in an effort to challenge the dominance of western medicine.

In 1926 Hakim Ajmal Khan (1868-1927), a Unani revivalist, a nationalist, a poet, a freedom fighter and a renowned Hakim, established a Research Committee for reforming and bringing Unani Medicine up-to-date. Two things stand out:

First, in his address to the gathering, Hakim Ajmal Khan said:

> "It is most essential for us to develop the *Tib* on the same lines of progress made in modern times. Ages have passed, knowledge has reached its heights by moving very fast but we did not make any progress. Not only that we did not make progress but on the other hand we have gone down in the direction of deterioration."[14]

Following this, he along with five associates took an oath which is reproduced below:

> "Today, Friday, the 2nd July, 1926, we started a basic and fundamental work in Unani System of Medicine for its moderation. We pray to God to help us in carrying out this magnificent work and to continue it to our best capacity."[15]

## Siddha – An Overview

The Siddha system has undergone many changes in the course of its long history and remains the mainstay of medical relief to a large section of population especially in the southern state of Tamil Nadu.

### Evolution and Theoretical Basis of Siddha System

The Siddha system of medicine originated in the Tamil speaking parts of India. The word Siddha means 'an object to be attained' or 'perfection or heavenly bliss'. It has been suggested that Siddha medicine could have originated in Harappan civilization because of the widespread use of different kinds of salts, which were not found in the Ayurvedic texts.

The Siddha system of Medicine comprises different types of sciences and practices such as alchemy, philosophy, yoga, magic and astrology. In the Siddha system religion and philosophy intermingle so as to direct the practitioners "to the path of righteousness." The medical literature of the Siddha system was scientifically codified – subject wise – only in 18$^{th}$ Century AD.

### Siddha Medicine in Pre-Independence Period

The Siddha system of medicine was officially patronized in the ancient Tamil kingdoms. It had various specialities with physicians dedicated to different branches of medicine. The Siddha system is reported to have had suffered setbacks due to natural calamities, inhibitions of practitioners about disclosing their formularies and the destruction of original manuscripts. The wisdom slowly declined from its original form leaving many missing links and with knowledge and skills confined to only a few physicians. The British government also discouraged the use of traditional medicine including Siddha.

13. Quaiser, Neshat. "Politics, Culture and Colonialism: Unani's Debate with *Doctory."* In *Health, Medicine and Empire: Perspectives on Colonial India,* edited by B. Pati and Mark Harrison. Hyderabad: Orient Longman, 2001.
14. Nizami, Zafar Ahmad. *Hakim Ajmal Khan*. New Delhi: Publications Division, Ministry of Information and Broadcasting, Government of India, 1988.
15. Razzack, Mohammed Abdur. *Hakim Ajmal Khan: The Versatile Genius*. New Delhi: Central Council for Research in Unani Medicine, Ministry of Health and Family Welfare, Government of India, 1987.

But later on, with the institutionalization of the Siddha system, the missing links are reported to have been re- discovered through clinical practice and also by establishing a rapport with the older Siddha physicians.

Initially, the Siddha system was practiced by those who were products of the Guru – disciple system. After the introduction of a formal education system, teaching through colleges was started in rural areas, where allopathy practitioners were scarce.

## Policy Formation and Approaches to the Indian Medicine (1946 onwards)

Just prior to independence and thereafter several committees were constituted to recommend appropriate remedial steps to bring the Indian Systems of medicine at par with other medical systems. A brief account of these committees follows. The account is based upon data supplied by the National Institute of Medical Heritage, Hyderabad and culled out by the PI.

### Bhore Committee (1946)

The Committee headed by Sh. Joseph Bhore recommended a rapid extension of bio-medicine but placed itself at a 'safe distance' from the traditional systems of medicine and left it to the provincial governments to decide what part, if any, should be played by the indigenous systems in public health and delivery of medical services.

### Sokhey Committee (1946)

The Sokhey Committee suggested "absorption" of the practitioners of Ayurvedic and Unani systems of medicine into state health organizations by giving them "further scientific training".

### Chopra Committee (1948)

The Chopra Committee was appointed by the Government of independent India under the Chairmanship of Lt. Col. (Dr.) RN Chopra himself an allopathic doctor, who was considered a sympathizer of the Indian system of medicine. He recommended *inter alia*:

(i) Harmonization of indigenous and western system of medicine through integration of the concepts and methods in the education system

(ii) Standardization and rationalization of research and production parameters,

(iii) Encouragement to learning by imbibing techniques from bio-medicine.

The committee also proposed that different system of medicines could be taught together.

### Pandit Committee (1951)

The Pandit Committee was established to finalize the recommendations made by the Chopra Report regarding "Education and Medical Institutions" and "Research." The idea of a common integrated syllabus for all medical colleges was rejected, but it was felt that research should be undertaken into the validity of indigenous medicine from the point of view of contemporary medical science. An early outcome of the Pandit Report was the establishment of the Central Institute of Research in Indigenous Systems of Medicine and the Postgraduate Training Centre for Ayurveda, both in Jamnagar, Gujarat in 1952.

### Dave Committee (1956)

The Dave Report presented a model integrated syllabus to be used in colleges that would impart education to the physicians of indigenous systems of medicine (ISM). The report positioned itself as a corrective to the Bhore Report. It stated:

> "The Bhore Committee . . . was not in a position to assess the value of the various systems on account of paucity of time and opportunity to conduct such investigation into the problem."

In particular, the Dave committee recommended only one syllabus to be applied throughout India with a course of five and half year's duration. It also recommended the establishment of a council like Medical Council of India. In addition, that the registration of ISM practitioners should be undertaken both in respect of products of college education but also those who had 15 years or more experience of working as "hereditary physicians".

Although the recommendations were circulated to the states they were not adopted, and each state continued to regulate education independently. The Dave Committee saw its work as carrying forward or "finalizing" the proposals of the Chopra Report relating to the state control of medical practice and education.

### Uduppa Committee (1958)

The Uduppa Committee moved beyond medical education and went into the quality and standardization of Ayurvedic pharmaceuticals. The Committee observed that, "the preparation of medicine by hand was one of the serious handicaps that made Ayurveda practitioners and their treatment less popular among modern people."

The committee was concerned about the lack of standardization and too many source books used for the formulation of medicine.

### Mudaliar Committee (1962)

This report was prepared by Dr. Arcot Lakshmanaswami Mudaliar who rejected the integrated approach of medical education and research. Instead, it was recommended that indigenous medicine should be taught and practiced in a purely classical form, with due attention to language skills and access to original sources. The recommendations of this committee were accepted by the government and the Central Council for Research in Indian Medicine and Homoeopathy was established in 1969 as a result.

### Vyas Report (1963)

Shri Mohanlal P Vyas was the Minister for Health and Labour, Ahmedabad, Gujarat who chaired the Committee which had Pandit Shiv Sharma one of the most prominent protagonists of Ayurveda among its members. The committee was entrusted with the task of drawing up a curriculum and syllabus of study in pure (unmixed) Ayurveda extending to over four years, which should not include any subject of modern medicine or allied sciences in any form or language. The report's title, "Report of the Shuddha Ayurvedic Education Committee," emphasized its dedication to the ideal of Shuddha, or pure ayurvedic doctrine and practice. Interestingly, the whole report was prepared in the Sanskrit language to emphasise the purist viewpoint.

### Sampurnananda Committee (1964)

Dr. Sampurnananda, former Chief Minister of Uttar Pradesh, chaired a Committee which also included Pandit Shiv Sharma and Dattatraya Anant Kulkarniji as members. Interestingly, no allopathic practitioner featured in the committee. The committee made the following recommendations:

1. That the syllabus should be predominantly Ayurveda oriented,
2. The eligibility criteria for admission in the Ayurveda course should be made as Intermediate pass with Sanskrit and a moderate knowledge of English,
3. Science subjects should not be made compulsory and may be taught later during the course.

Dr. Sampurnanand wanted to bring back the wholesome and traditional way of Ayurvedic teaching and education. However this committee could not establish a consensus regarding the syllabus. It was chiefly because some members were interested in promoting the integrated syllabus while other members wanted to persevere with the Shuddha (pure) Ayurveda course. Also, the media, teachers and students of Ayurveda raised various obstacles in the way of implementing the committee's report.

To avoid the difficulties and controversies in uniting on the syllabus, the committee to a large extent adopted the syllabus followed at the Banaras Hindu University which was introduced at other places with minor alterations. Ultimately the committee recommended the introduction of a uniform integrated syllabus for Bachelor of Ayurvedic Medicine and Surgery (BAMS), which came into effect from 1976.

## Regulation of ISM Education Prior to Central Council of Indian Medicine

Before the enactment of Indian Medicine Central Council (IMCC) Act, 1970 several state governments had passed different Acts to regulate Ayurvedic Degrees and the practice of the systems. The earliest one appears to be the Board of Indian Systems of Medicine Act 1947 of Mysore State followed by East Punjab Ayurvedic and Unani Practitioners Act 1949. Likewise, Madras, Maharashtra, Hyderabad, Andhra Area, Jammu & Kashmir had their own Acts. The Andhra Ayurvedic & Homeopathic Medical Practitioners Registration Act 1956 was specifically introduced to regulate and recognize practitioners of Andhra area.

## Closure of Integrated Medicine Course

Over time the support for integrated colleges declined while pressure for pure ayurvedic colleges increased. Ayurvedic practitioners and supporters of Ayurveda generally pointed to the popularity of indigenous practitioners; the higher cost of integrated colleges due to the expensive equipment required teaching Western medicine; the tendency to spend too much time on allopathy; the availability of indigenous graduates for rural practice and finally, the inherent incompatibility of the two systems. Eventually, the supporters of a pure system of education and training for Ayurveda gained political support. This led to the formation of several independent councils for looking after the research, development, training and aspects related aspects of ISM.

Thus, when efforts were going on for the integration of various medical streams, on the other side a campaign was gaining ground against it. Stalwarts and organizations representing both modern medicine as well ISM began campaigning for and against the continuation of the integrated syllabus. The allopathic doctors started objecting to the teaching of modern subjects to Ayurvedic students. The orthodox Ayurvedic scholars were also not in favour of it. Further practical difficulties were faced in teaching modern medicine subjects to the Ayurvedic students.

The hereditary Ayurvedic physicians were also exerting their influence on the government though they were willing to include surgery, obstetrics, toxicology etc., of modern medicine though not overtly. They succeeded in starting Shuddha (pure) Ayurveda, Unani and Siddha courses in all ISM colleges from 1960 onwards.

## Establishment of Central Council of Indian Medicine (CCIM)

To bring uniformity in standards of ASU medical education and register practitioners of Indian medicine the IMCC Act, 1970 was enacted thereby establishing the Central Council of Indian Medicine (CCIM). The Council has been patterned with almost identical composition as that of the Medical Council of India (MCI) set up by the MCI Act, 1956. The comparison indicates that a similar system for membership and election to the General Body and the Executive Body of the CCIM was introduced. A comparative chart is at **Annexure I.** The length of the course for MBBS/BAMS/BSMS and BUMS is 5½ years. This laid the foundation for claiming parity and attempts to equate the professional qualifications of Indian medicine courses with modern medicine.

### Ramalingaswami Committee (1981)

Professor V Ramalingaswami (1921-2001), Fellow of the Indian National Science Academy, Fellow of the Royal Society, and a one time President of the Indian National Science Academy, was considered one of the most illustrious Indian scientists of his day. The committee that he chaired recommended that the existing model of health care in India should be replaced by one that combined "the best elements in the tradition and culture of the people with modern science and technology." In this it differed from the Chopra Report, which recommended not a combination of systems but absorption of the best elements of the traditional by modern medical science.

## Outcome of Reports by Various Committees

Although much water had flown under the bridge, integration of Ayurveda into modern medicine was not accepted. The government wanted research along scientific lines both for the Ayurvedic and Unani systems – to be incorporated into modern medicine in due course. The thrust was on having one medical system and the teaching of modern science was considered essential for the betterment of Indian medicine.

Many councils, national institutions and drug testing laboratories were established following the reports of the above mentioned committees. Leena Abraham and V Sujatha have outlined the role of "political economy" which affected the development of Indian medicine as an independent system. For the authors, the "state backed institutional development subjected ISM to validate itself along scientific lines. But the increasing role and participation of vaidyas and certain institutions mitigated the hegemony of the scientific model to some extent."[16]

16. V Sujatha and Leena Abraham, "Medicine, State and Society", *Economic and Political Weekly,* April 18, 2009, Vol. XLIV, No. 16, pp. 35-42.

## Third Five Year Plan and ISM (1961-66)

The Third Five Year Plan was the first plan where there was a specific section devoted to strategies to promote Indian Medicine. The significant recommendations included the following:

1. Establishment of a Central Council of Indian Medicine to regulate Ayurvedic education in the ISM sector; separate Directorates for Indian Medicine and Statutory Council and Boards to be set up in all the states,
2. Constitution of a separate Central Drugs Control Organization for the regulation of indigenous medicine,
3. Compilation of Ayurveda and Unani pharmacopoeias; establishment of at least one medicinal herbal garden in each state and also a central medical plant garden,
4. Survey of medicinal drugs found beneficial for the treatment of common ailments,
5. Establishment of pharmacological research units preferably attached to the botany departments of colleges to pave the way for laying down working standards for raw materials used in Ayurveda and Unani pharmacies.

These goals drawn up in the early 1960s remained the template for state action for the next there decades or so. Subsequent five year plan documents were either silent about this sector or simply repeated the approach.

### ISM Landmarks

The Central Council for Research in Ayurveda (CCRA) was set up as an advisory body in 1962 and finally the Central Council for Research in Indian Medicine and Homeopathy (CCRIM&H) was established in 1969.

The Central Council for Research in Ayurveda and Siddha (CCRAS), an apex body for the formulation co-ordination and development of research in Ayurveda and Siddha on scientific lines was established in March, 1978.

The purpose of all these efforts was to make it possible for the poor to have access to a health system which was 'legitimate' and the stated goal was to "validate" the knowledge of Ayurveda in 'scientific terms'.

Drugs standardization, preparation of official formularies for simple and compound drugs, the prescription of tests for identification and for judging the purity of drugs and for inventorising the methods of administration were the main thrusts of the Ayurvedic pharmacopoeia committee which was established during this period.

Hence, from the vaidya who was trusted for producing quality medicine for individual patients, the emphasis moved to ready-made preparations produced by large manufacturers. Referring to commercialization Madhulika Banerjee has observed:

> "The rules and regulations formulated by government actually help the profit making big pharmaceuticals companies."[17]

While this movement to make Ayurveda scientific and industrialized continued, in the 1980s the spurt in complementary and alternative medicine abroad and revival of interest in the natural products presented a new thrust area for the government.

In 1995, the Narasimha Rao government decided to convert what was until then a mere division (albeit with huge infrastructure attached to it) of the Department of Health in the Ministry of Health and Family Welfare, into a full fledged department with an independent Secretary.

The history of how the Department of Indian systems of medicine was created and subsequently acquired the name of AYUSH (an acronym for Ayurveda, Yoga, Unani, Siddha and Homoeopathy) remains of importance even today. That is because what happened in the years 1993 to 1995 have flashbacks to how protagonists of Ayurveda had influenced many government decisions pre- and-post independence. The following account is based upon the PI's knowledge of what took place in those years which has been counter checked with people who were directly involved in decision-making.

It can be said that the momentum that started post-independence which itself had been driven by decisions taken on the basis of committees set up in the 50s and 60s resulted in extensive institution building although in dimension it could not be compared even remotely to developments on the side of modern medicine. The Prime Minister PV Narasimha Rao was among the staunch supporters

17. Banerjee, Madhulika, *op.cit.*

of the Indian systems. Since he had served as the Union Health Minister in the mid-eighties he was well aware of the milestones that had been crossed and was keen to see that various aspects of Indian medicine got due importance. In December 1993 at the Akhil Bharatiya Ayurveda Mahasammelan for the first time Prime Minister Narasimha Rao announced publicly that there was a move to establish a separate Directorate or a separate Ministry for Ayurveda. A copy of his speech delivered at the Conference is at **Annexure-II**.

The Prime Minister was well acquainted with the grand old Vaidya Brahaspati Dev Triguna and his son Devendra Triguna. They had direct access to him, which overcame huge barriers that otherwise existed. In conversation with Vaidya Devendra Triguna the PI came to know that the establishment of a department for Indian medicine was not acceptable to the bureaucrats in the Health Ministry. Senior officers wrote strongly against the move arguing among other things that Ayurveda and the other Indian systems pre-dominantly addressed preventive health and the management of healthy life-styles. This did not require to be administered in the same way that modern medicine was governed. In July-August 1994 in a meeting chaired by the then Prime Minister Shri PV Narasimha Rao the officials once again opposed the move to establish an independent Department for ISM.[18] But despite strong resistance the decision to establish an independent Department was taken. The Government notification setting up the Department issued on 8 March 1995.

An independent Secretary was soon appointed to head the Department with an office in the Red Cross Bhawan near Parliament House with a complement of professional staff. The short-lived coalition Governments of the late nineties were ambivalent to ISM. The fortunes of the Department changed dramatically at the turn of the century. The Vajpayee government was as committed to Indian medicine as the then Prime Minister PV Narasimha Rao.

In April 2000 at the suggestion of the Confederation of Indian Industry, the Department agreed to host a joint national conference in Vigyan Bhavan which was inaugurated by the Prime Minister Vajpayee, attended by UN agencies besides all secretaries of Government of India. The president of CII Shri Rahul Bajaj laid a roadmap for industry's support for Indian medicine; Brahaspati Dev Triguna recited *shlokas* in Sanskrit and the Prime Minister released a new volume of the Ayurvedic pharmacopoeia and said laudatory words in praise of the systems – all extempore.

Another landmark development was when the Prime Minister inaugurated a conference on Ayurveda in New York in 2000. Around the same time the Minister for External Affairs Shri Jaswant Singh chaired a meeting on how the Indian missions abroad could help propagate Indian medicine. In the months to come ISM research, books, plants,drugs and practices were showcased at the World Health Assembly in Geneva and at the EXPO 2000 at Hanover (Germany.)

Even so Ayurveda aficionados were not happy with being clubbed under the umbrella of Indian medicine. They argued that Ayurveda should be recognized for what it was and the nomenclature of the Department should be changed to incorporate Ayurveda in its name. In 2003 the name of the Department was changed from ISM & H to AYUSH, an acronym for Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy. A copy of the Government notification is at **Annexure-III**.

This history serves to show how periodically proximity to the centre of power helped give prominence to Indian medicine and Ayurveda in particular. Unlike the general belief that this importance was a part of religious revivalism with a Nationalist agenda, the previous history shows that the Department was created by Prime Minister Narasimha Rao who seemed to have intrinsic confidence in the Indian systems and the role they could play in the delivery of health services. Years later the Government of Delhi under the Chief Ministership of Sahib Singh Verma alloted 95 acres of land for setting up an Ayurveda Hospital. Later, Chief Minister Sheila Dikshit sanctioned ample funds to establish a 210-bed hospital there with nearly 50,000 sq. metres of built up space. In 2002 the Rajasthan State set up the Rajasthan Ayurvedic University at Jodhpur on 300 acres of land which today has affiliated 44 ISM colleges. The examples show how different governments and political parties have espoused the cause of Ayurveda and other Indian systems of medicine.

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18. As told by Vaidya Devendra Triguna to the PI and corroborated by the then Joint Secretary in charge of ISM, Mr Pawan Chopra.

While efforts to systematize the development and propagation of Ayurvedic, Unani and Siddha medicine received impetus through the creation of an independent department, the first ISM policy was announced only in 2002. Also, it was only in the Ninth Five Year Plan (1997-2002) that a separate chapter was devoted to the Indian system of medicine; some important developments that took place interalia included:

- The establishment of National Medicinal Plants Board,
- The creation of the Traditional Knowledge Digital Library (TKDL), a collaboration of the erstwhile Department of Indian Systems Medicine, the Council of Scientific and Industrial Research (CSIR), Patent examiners and Information Technology experts, to foil patent applications based on ASU knowledge,
- The establishment of the National Institutes for Siddha and Unani Medicine and the upgradation of the National Institute for Ayurveda,
- Centrally funded projects and schemes to establish state drug testing laboratories; the notification and compulsory adoption of Good Manufacturing Practices by Industry; the publication of pharmacopoeias and formularies for Indian medicine,
- Focus given to improving the quality of education,
- A decision to establish an All India Institute of Ayurveda,
- Thrust on the globalization of Indian medicine.

The period 1995 to the present day has been largely spent in augmenting and consolidating these initiatives. In the ensuing report the current status of Ayurveda, Siddha and Unani system of medicine has been described with special reference to the benefits that have accrued to the public; also gaps that need to be addressed in the 12$^{th}$ Plan (2012-2017).

# Annexure-I

## Comparative Constitution and Membership of MCI Act, 1956 & IMCC Act, 1970

| | Medical Council Act, 1956 | Indian Medicine Central Council Act, 1970 |
|---|---|---|
| [A] Constituition | a) One member from each State other than a Union Territory to be nominated by the Central Government in consultation with the State Government concerned. | The Central Government shall, by notification in the Official Gazette constitute for the purposes of this Act a Central Council consisting of the following members, namely:-<br><br>a) Such number of members not exceeding five as may be determined by the Central Government in accordance with the provisions of the First Schedule for each of the Ayurveda, Siddha and Unani systems of medicine from each State in which a State Register of Indian Medicine is maintained, to be elected from amongst themselves by persons enrolled on that Register as practitioners of Ayurveda, Siddha or Unani, as the case may be; |
| | b) One member from each University to be elected from amongst the members of the medical faculty of the University by members of the Senate of the University or in case the University has no Senate, by members of the Court. | b) One member for each of the Ayurveda, Siddha and Unani systems of medicine from each University to be elected from amongst themselves by the members of the Faculty or Department (by whatever name called) of the respective system of medicine of that University; |
| | c) One member from each State in which a State Medical Register is maintained, to be elected from amongst themselves by persons enrolled on such register who possess the medical qualifications included in the First or the Second Schedule or in Part II of the Third Schedule. Seven members to be elected from amongst themselves by persons enrolled on any of the State Medical Registers who possess the medical qualifications included in Part I of the Third Schedule. | c) Such number of members, not exceeding thirty per cent of the total number of members elected under clauses (a) and (b), as may be nominated by the Central Government, from amongst persons having special knowledge or practical experience in respect of Indian medicine:Provided that until members are elected under clause (a) or clause (b) in accordance with the provisions of this Act and the rules made there under,<br><br>d) The Central Government shall nominate such number of members, being persons qualified to be |

| | Medical Council Act, 1956 | Indian Medicine Central Council Act, 1970 |
|---|---|---|
| | d) Eight members to be nominated by the Central Government. | chosen as such under the said clause (a) or clause (b), as the case may be, as that Government thinks fit; and references to elected members in this Act shall be construed as including references to members so nominated.<br><br>e) The President of the Central Council shall be elected by the members of the Central Council from amongst themselves in such manner as may be prescribed. |
| | e) The President and Vice-President of the Council shall be elected by the members of the Council from amongst themselves. | There shall be a Vice-President for each of the Ayurveda, Siddha and Unani systems of medicine who shall be elected from amongst themselves by members representing that system of medicine, elected under clause (a) or clause (b) of sub-section (1) or nominated under clause (c) of that sub-section. |
| [B] Mode of Election | a) An election under clause (b), clause(c) or clause (d) of sub-section 3 shall be conducted by the Central Government.<br><br>b) Where any dispute arises regarding any election to the council, it shall be referred to the Central Government whose decision shall be final. | a) An election under clause (a) or clause (b) of sub-section (1) of section 3 shall be conducted by the Central Government in accordance with such rules as may be made by it in this behalf.<br><br>b) Where any dispute arises regarding any election to the Central Council, it shall be referred to the Central Government whose decision shall be final. |
| [C] Restriction on Election and Membership | a) No person shall be eligible for nomination under clause (a) of the sub-section 1 of section B unless he possess any of the medical qualifications included in the First and Second schedules residing in the state concerned, and where a State Medical Register is maintained in that State, is enrolled on that Register.<br><br>b) No person may at the same time serve as a member in more than one capacity. | a) No person shall be eligible for election to the Central Council unless he possesses any of the medical qualifications included in the Second, Third or Fourth Schedule, is enrolled on any State Register of Indian medicine and resides in the State concerned.<br><br>b) No person may at the same time serve as a member in more than one capacity. |

## Annexure-II

## Inaugural Address of Prime Minister of India Shri PV Narasimha Rao at the 54th Session of All India Ayurveda Conference at Nagpur on 25 December 1993

### अखिल भारतीय आयुर्वेद महासम्मेलन के 54वें महाधिवेशन, नागपुर के अवसर पर माननीय नरसिंह राव जी, प्रधानमंत्री, भारत सरकार का उद्घाटन भाषण

आदरणीय शरद् पवार जी, शंकरानन्द जी, श्रद्धेय त्रिगुणा जी, और आयुर्वेद के महान् ज्ञाता, विद्वान और उसके अनुष्ठान करने वाले महानुभव। आप सब लोगों को मेरा प्रणाम है। आज कई वर्षों के बाद मुझे यह अवसर मिल रहा है, आप सभी लोगों से मिलने का और आपकी बात सुनने का और अपने कुछ विचार आपके सामने रखने का। मैं आपका बहुत–बहुत आभारी हूँ।

मैं स्वास्थ्य मंत्री राज्य में रह चुका हूं, केन्द्र में रह चुका हूं और ये जो विभिन्न पद्धतियों के बीच टकराव होता है और उस टकराव के कारण जो वाद–विवाद होते हैं उनसे मैं परिचित हूँ। मैं सोचता हूं कि इन वाद–विवादों को बंद करके, पूरा बन्द नहीं कर सकते तो कम करके आगे बढ़ने का मौका मिलना चाहिए। आप जानते हैं कि एक प्रणाली में एक दृष्टिकोण है, दूसरे में दूसरा दृष्टिकोण है। दोनों ही अपनी–अपनी जगह में सही हो सकती हैं। दोनों में ही कुछ त्रुटियाँ हो सकती हैं, कमियां हो सकती हैं। आज सब यह अवश्य स्वीकार करते हैं। अंततोगत्वा बहुत कुछ गलतियाँ करने के बाद, बहुत कुछ वाद–विवाद के बाद, इसे स्वीकार किया जा रहा है कि मानव का शरीर कोई अलग–अलग अंगों का जमघट नहीं है। कहीं से पांव ले आये, कहीं से हाथ ले आये, कहीं से नाक ले आये, सबको इकट्ठी कर दिया तो मानव बन गया। ऐसी बात नहीं है। इसलिए जो ओवर स्पेशलाइज़ेशन होता है कि आँख वाला आँख ही देखेगा, पाँव वाला पाँव ही देखेगा, नाक वाला नाक ही देखेगा और एक दूसरे में इतना झगड़ा होगा। आँख और नाक में झगड़ा होने लगा तो क्या उस बीमार का हाल होगा? तो ये अच्छी बात नहीं है इस ओवर स्पेशलाइज़ेशन को हम इस हद तक न ले जायें कि जो मानव है, जो मनुष्य है, जो रोगी है, उसके मनुष्यत्व को, उसकी समग्रता को ही हम भूल जायें।

इसलिये यह जो आजकल होलिस्टिक कहा जा रहा है एक समग्र दृष्टि है। मनुष्य का शरीर आपके सामने है। केवल शरीर नहीं है, मन भी है और सभी की आवश्यकताएँ है। अभी हाल में पहली बार इस बात को मान लिया गया है। मैं सोचता हूं कि आयुर्वेद की सबसे बड़ी विजय यही है। लेकिन केवल विजय कहने से काम नहीं चलेगा। अब आयुर्वेद के लिए हमारे देश की जो चिकित्साएं हैं चाहे चीन की हों, चाहे हमारी हो, उनके लिये अच्छे दिन इसलिये आये हैं कि इनको बाहर के लोग मानने लगे हैं। पहले तो यही लोग नहीं मानते थे। एक–दूसरे की काफ़ी खिचाई होती थी। आलोचना होती थी कि आयुर्वेद कोई पद्धति ही नहीं है। इस तरह की जो बातें सुनने में आती थीं आजकल सुनने में नहीं आ रही हैं। आज तुलसी को लेकर, अश्वगंधा को लेकर, नीम के पत्ते को लेकर और पता नहीं कितनी मूलिकाएं हमारे पास हैं एक–एक मूलिका को यहां से बड़े सस्ते दामों में हमारे जो आदिवासी लोग हैं उनको थोड़ी बहुत मज़दूरी देकर बटोर–बटोर कर बाहर ले जाया जा रहा है। प्रयोगशालाओं में उनके गुण–धर्मों का परीक्षण किया जा रहा है, उनकी उपयोगिता के बारे में बड़ी–बड़ी पत्रिकाओं में बातें निकलने लगी हैं और बहुत बड़े–ऊंचे दर्जे के डाक्टर और विशेषज्ञ उनको मान रहे हैं, उनका व्याख्यान कर रहे हैं।

तो अब हमें सूझने लगा है कि मेरे घर के सामने जो नीम का पेड़ मैं पचास साल से देख रहा हूं और मुझे पता ही नहीं था कि इतनी अच्छी चीज़ है। मुझे अच्छी तरह मालूम है हमारे छोटे–छोटे गांव है तथा गांव से दो फ़र्लांग पर जंगल शुरू होता था। कोई बीमारी आती, कोई बीमार पड़ जाता था तो वैद्यराज आते थे। वह

आयुर्वेद महासम्मेलन पत्रिका, फरवरी 1994

जंगल में जाते और कुछ पत्ते वग़ैरह ले आते और पत्ते के रस से रोगी ठीक हो जाता था। अब वो पत्ता क्या है वह बताने वाला नहीं रहा। क्योंकि उसको हमने बड़ा गुप्त रखा। इस देश में शास्त्र को, जानकारी को, ज्ञान को दबा–दबाकर रखने की परम्परा चल पड़ी। किसी और को नहीं पता। ऐसे प्रिस्क्रिप्शन्स हैं, ऐसी रेसिपीज़ हैं जो वैद्यराज के साथ ही समाप्त हो गए। उनके लड़के क्लर्क बने फिरते हैं। अब उसको सुरक्षित करने वाला कौन है? उसको आगे चलाने वाला कौन है? और दूसरी तरफ सब खेत ही खेत उगे हैं कहीं जंगल तो नज़र ही नहीं आता। जंगल के लिये जाना हो तो कहीं विन्ध्य पर्वत में चले जाइये और कहीं चले जाइये। वहां भी काफ़ी कटाई हो रही है। इधर–उधर के पेड़ पौधों के साथ कटाई हो रही है। हमारे बहुत उपयोगी पेड़ जिनमें औषधियां बनती हैं, वो भी समाप्त हो गये। आज उनको पहचानने वाले कोई नहीं है। मैं अच्छी तरह जानता हूं अपने गांव के बारे में जो लोग वैद्य थे मेरे बचपन में, उनके लड़के आज कुछ जानते नहीं हैं, उनके पोते नहीं जानते और वह ज्ञान उनके साथ समाप्त हो गया।

आज आप जब आयुर्वेद को आज़ाद करवाना चाहते हैं उसका सबसे पहला काम यह होना चाहिये कि जहां ज्ञान हो उसे आप पहले खुले में लाइये। जहां कहीं हो, चाहे पुराने ग्रन्थ हों, ताड़ पत्र हो, किसी पर भी लिखे हुए हों, कहीं भी लिखे हुए हों या छोटी–छोटी रेसिपी हमारे यहां उनको चिटका कहते हैं उनके बारे में जो ज्ञान है हमारी पुरानी महिलाओं को, वृद्ध महिलाओं को जो ज्ञान है जिन्होंने दस–दस पन्द्रह पन्द्रह बच्चे पाले थे और कई उसमें हट्टे–कट्टे भी निकले वो ज्ञान नहीं रहा है। आज इस बात के संग्रह की ज़रूरत है। आपने देखा होगा ये जो हमारा आदिवासी इलाका है वहां से लोग आते है थैलियों में मुलिकाएं भरकर, उनको कोया कहते हैं। वो एक टाईप है। वो आपके पास आयेंगे, मेरे पास आयेंगे। पर तस्वीर खिचवायेंगे। तस्वीर शरद जी को दिखायेंगे, शरद जी यह तस्वीर साल्वे जी को दिखायेंगे यह कहने के लिये कि हम इन सबसे मुलाक़ात करते हैं। कोई बुरी बात नहीं है। लेकिन वो सड़क के किनारे बैठकर मूलिकाओं का प्रदर्शन करते हैं। उसमें कई चीज़ें ग़लत हैं। बोगस हैं। लेकिन कहीं–कहीं ऐसी चीज़ निकल जाती है उसमें जो बहुत नायाब चीज़ हैं। क्योंकि उसी एक परिवार में उसका ज्ञान होता है। उस परिवार के साथ फिर वह ज्ञान भी समाप्त हो जाता है। आज किसी ने इन लोगों से बात की है? किसी ने उनसे वार्तालाप किया है कि उसके पास क्या है? क्या नहीं है? दस–बीस रूपया खर्च करके उसके पास क्या चीज है उसका पता भी लगायें? कहां से वो लाते हैं उसका भी पता लगायें। तो वन मूलिकाओं का इन्हीं के पास से हमें ज्ञान का भण्डार मिल सकता है।

जो मूलिकाऐं हमारे पुराणों में लिखी हैं वह सभी वनों में नहीं मिलतीं। ये एक तो हिमालय के बारे में कहा जाता है दूसरा श्रीशैलम के पास जो हिल्स हैं उनके बारे में कहा जाता है कि औषधियों में काम आने वाली मूलिकाओं का बहुत बड़ा ख़ज़ाना वहां मौजूद है। इसी तरह कुछ ऐसे स्थान हैं, कुछ ऐसे वन हैं जिनके बारे में ये प्रसिद्ध है, सभी वनों के बारे में नहीं है। हम जानते हैं कि कहां–कहां यह प्रसिद्ध है। ये ख्याति कहां है और क्यों है? वहां जाकर देखें। वहां जाकर लोगों से बात करें। कोई बड़ा काम नहीं है। हमारे आदिवासी इलाक़ों में कुछ अजीब रोग हैं। संक्रामक भी हैं, असंक्रामक भी है। लेकिन उनका कहीं कोई इलाज नहीं है। बाहर के न वैद्य कर सकते हैं न डाक्टर कर सकते हैं। कोई कर सकते हैं तो वहां की जो मूलिकाएं होती हैं उसी से उनका इलाज होता है। क्या आयुर्वेद ऐसे रोगों को ठीक कर सकता है? परवान चढ़ाना हो तो यह तभी होगा जब आप चुनौती स्वीकार करेंगे।

मैं यह नहीं कह रहा हूं कि इतनी बड़ी इमारत आपको चाहिये तो आप मत लीजिये। लेकिन अपना स्टैन्डर्डाइज़ेशन करिये। आयुर्वेद चिकित्सा करने में क्या–क्या लगता है, कैसी आपको इमारत चाहिये, प्रयोगशाला कैसी चाहिये, चाहिये कि नहीं चाहिये। दूसरे आज जो आधुनिक पद्धतियां है ब्लड काऊन्ट वगैरह देखने के, ब्लड प्रेशर देखने के, और चीज़ें देखने के जो छोटे–छोटे आले हमारे पास हैं उनकी आपको आवश्यकता है या नहीं। एक जमाने में नहीं थी। खाली नाड़ी देखकर पहचानते थे तत्कालीन वैद्यराज, अब भी वैसे हैं लेकिन बहुत कम रह गये हैं।

**आयुर्वेद महासम्मेलन पत्रिका, फरवरी 1994**

मुझे मालूम है एक वैद्यराज एक गांव में होते थे और पचास गांवों से रोगी उनके पास चले आते थे। प्रैक्टिस कुछ नहीं होती थी।

### ''वैद्यो नारायणो हरिः''

वैद्यराज अपने पास से उनको दवा दे देते थे। कोई उसका मूल्य नहीं होता था। और सबसे बड़ी बात हमारे समाज में यही है कि दवा की कोई कीमत नहीं ली जाती। गांव वैद्यराज का प्रबन्ध करता है। वैद्यराज लोगों की बीमारियों को ठीक करने के लिये अपने पास से दवायें बनाते भी हैं और देते भी हैं। ये एक ऐसा नमूना है को–आपरेटिव–लिविंग का कि जिसमें किसी प्रकार के पैसे का मामला नहीं है। फ़ीस का मामला नहीं है। ये एक समाज था हमारा। अभी तक है कई गांवों में। शहर से जितना दूर जायेंगे उतना आपको वह वातावरण मिलेगा। ये फीस वाला चक्कर वहां नहीं है। सभी को दवा मिलती है जब हो तो, नहीं हो तो अलग बात है। तो इस तरह से वैद्य को लेकर हमारा एक सामाजिक संगठन भी है। उस सामाजिक गठन में उसको कैसे बैठाया जाता है इसका भी एक नमूना हमारे पास है। पुराने लोग कहते है कि जिस गांव में कर्ज देने वाला न हो, जिस गांव में वैद्य नहीं, जिस गांव के पास नदी–नाला बहता नहीं, बहने वाला पानी न हो (देखिये कितना इसमें स्वास्थ्य का मामला है) और जिस गांव में कोई मर जाय, किसी की शादी हो जाय, कोई शुभ हो अशुभ हो उसको करने वाला पुरोहित जैसा आदमी न हो। ये चार–पांच ऐसे लोग हैं जो जहां नहीं होते हैं उस गांव में आपको बसना नहीं चाहिये। ऐसा पुराने लोगों का कहना है। उसमें वैद्य सबसे पहले आता है और फिर कर्ज देने वाला। अब आप कर्ज देने वाले बैंक हो गये हैं। मान लीजिये वैद्य के डाक्टर हो गए है। पानी–वानी तो बहता नहीं है। आजकल तो सब बांध लग गए हैं। कहीं कोई नाला आए तो आए, नहीं तो न आए। इस तरह से समाज बदला है। लेकिन साथ ही साथ यह भी है कि दवा देने वाला आदमी वहां जरूर चाहिये। ये एक ऐसी मांग है जो हर गांव से आती है। हर शहर से आती है और इस मांग के चलते आपका एक ऐसा पेशा है जो कभी समाप्त नहीं होगा। आपके पास बेरोज़गारी बिल्कुल नहीं होगी। जब तक आते रहेंगे रोगी आपको काम मिलेगा। इसका मतलब यह नहीं है कि आप उनको एक्सप्लाइट करें। मैं यह कह रहा हूं समाज के लिये आपकी आवश्यकता ऐसी है, आपकी अनिवार्यता ऐसी है कि आपके बगैर नहीं रह सकता। किस चीज़ की कमी है। अपने शास्त्र को, अपनी जानकारी को और पैना बनाने में और आगे बढ़ाने में, उसको परवान चढ़ाने में कोई कमी हमको नहीं करनी चाहिए, कोई संकोच नहीं करना चाहिये।

कभी पूछा जाता है कि आप ये बनेंगे तो आपकी नौकरी मिलेगी कि नहीं मिलेगी। दूसरे पेशों में यह बात लागू हो सकती है लेकिन आपके लिये नहीं। आप अपने गांव में भी बैठकर लोगों की सेवा कर सकते हैं। इसको सुविधाएं देने की बात है। हम कोशिश कर रहे हैं। अभी शंकरानन्द जी ने कहा बहुत कुछ इससे पहले हो चुका है। आन्ध्र प्रदेश में और दूसरे राज्य में। इसका अलग विभाग और निदेशालय वगैरह है।

सरकार के स्तर पर तो यह होता है, लेकिन उससे काम पूरा नहीं होता। अब भारत सरकार में भी कई दिन हुये हमने सोचा है कि इसका अलग डायरेक्टर या अलग मिनिस्ट्री ही बना दें। क्या फर्क़ पड़ता है। बस वो ही काम करता रहेगा। जैसा हमने नान कन्वेंशनल एनर्जी के लिये सौर ऊर्जा गोबर गैस के लिये जब से हमने मिनिस्टर अलग बना दिया है उस पर इतना काम किया जा रहा है, इतना ध्यान दिया जा रहा है और एक साल के अन्दर उन्होंने काफ़ी प्रगति दिखाई है। आयुर्वेद के विषय में भी यह हो सकता है। ठीक है जो करना है हम करेंगे लेकिन इस विद्या को आगे बढ़ाने का काम आपका है। हम और कुछ नहीं कह सकते हैं। मैं ये कह सकता हूं कि यदि मैं किसी का प्रतिनिधि हूं तो भारत के रोगियों का प्रतिनिधि हूं। न मैं डाक्टर हूं, न वैद्य हूं न और कुछ हूं मुझे क्या चाहिये? आपके सिस्टम के झगड़े में मुझे नहीं पड़ना है मुझे तो शफा चाहिये और ये बात आपको समझना है। आज बीमार कहां–कहां जाता है शफा पाने के लिये। कोई मंतर वाले के पास जाता है कोई जंतर वाले के पास जाता है कोई छूँ–फूंक वाले के पास जाता है, कोई कुछ और करता है। ये सब करता

है किस लिये? इसलिये कि उसे अपनी जान प्यारी होती है। वह आपके सिस्टम में पड़ना नहीं चाहता है। जैसे कह दिया कि जिसको कुछ मन का रोग हो तो किसी मंदिर के स्थान में ले चलिये, वहां उसको रखिये क्या मतलब है इसका? साइकोलाजिकल ट्रीटमेंट कैसे होता है? उसको अपने घर से ले जाइये, कहीं तिरूपति, कहीं श्री शैलम्, कहीं काशी, वहां उसे बैठाइये। रोज़ जप कराइये उससे। जप का क्या मतलब है? क्या जपता है शायद उसका अर्थ उसे मालूम न हो मगर जपता है। क्यों ये कहा गया है कि जप होना चाहिये, करना चाहिये? इससे पीछे कुछ रहस्य है, बाते हैं जिनको समझने की आवश्यकता है। ये केवल गंवारपन नहीं है, ये पिछड़ा पन नहीं है। अपने मन और शरीर को ठीक रखने के लिये इन सारी चीज़ों की आवश्यकता होती है। क्यों कहा जाता है कि एकादशी के दिन व्रत करो, खाना मत खाओं, उपवास करो। कई लोग तो ऐसा उपवास करते है कि कुछ और चीज़ें खा जाते हैं। ये सब क्या है? बहुत ही अच्छे आरोग्यप्रद हैं ये चीजे, ये बातें। ये सब कुछ हमारे पास मौजूद है। तो इस परम्परा को आगे बढ़ाने के लिये और उसका एक वैज्ञानिक रूप देने के लिये हमें बहुत कुछ करना है।

अभी बड़े–बड़े डाक्टरों से मैंने सुना है कि आधुनिक रोगों का रूप बदल गया है। अभी कह रहे हैं वे डाक्टर लोग कि इंजेक्शन और एन्टीबायोटिक का ज़माना चला गया है। आज जो रोग मानव जाति को परेशान कर रहे हैं वो लाइफ़–स्टाइल के रोग हैं। आपका आहार–विहार कैसा है, आपकी जीवन शैली कैसी है उस पर से ये रोग आपको आ रहे है। इसलिये जीवन शैली पर आधारित और सम्बन्धित रोगों की अब बहुत ज़्यादा रोकथाम आपको करनी पड़ेगी। इन्जेक्शन मिल सकते हैं, जैसे बड़े रोगों का कोई न कोई रास्ता निकल जायेगा, आपरेशन हो जायेगा तो किसी का हृदय निकाल कर किसी को लगा देंगे, शायद किसी की बुद्धि भी निकाल कर किसी को लगा देंगे क्या पता? ये सारी चीज़ें मिल सकती हैं। लेकिन जो ऐसे रोग हैं जिनका इस प्रकार इलाज नहीं हो सकता वो है लाइफ़–स्टाइल वाले रोग जैसे डायबिटीज़ है। इसलिये ये सारी बातें हैं जिनका जवाब मैं सोचता हूं कि हमारी परम्पराओं में है। बहुत सोचना है, बहुत खोज करनी है, चर्चा करनी है और उसकी असलियत तक पहुंचने के लिये काफ़ी प्रयास करने पड़ेंगे।

दवाओं के बारे में एक बात कहना चाहूंगा। कई लोग आजकल आयुर्वेद के नाम से फ़ार्मेसी खोल रहे हैं। अच्छी बात है। किसी को कोई एतराज़ नहीं। लेकिन आपकी दवा खाकर पचास लोग मर गये ये कहा जाय तो आपकी दवाओं को कौन पूछेगा। आप जो दवा बनाते हैं, आयुर्वेदीय दवाओं के लिये ऐसी बदनामी होगी तो इससे तो आपका पूरा सिस्टम ही बिगड़ जायेगा। बहुत क्षति होगी। शायद कुछ लोग सब जानबूझ कर करते होंगे। अख़बारों में लिखाते होगें ये हो सकता है कि इससे आपकी बदनामी हो भी रही है और की जा रही है लेकिन सावधान आपको रहना पड़ेगा। कई लोग कहते हैं कि आयुर्वेदिक औषधियों पर मेरा बड़ा विश्वास है लेकिन कोई असल औषधि देने वाला नहीं है। इधर–उधर की चीज़ें हमको मिल जाती है जिससे शफा की आवश्यकता है। यह शंकरानन्द जी का काम है, कैसे इसको स्टैण्डर्डाइज़ करेंगे। जैसे एलोपैथी और दूसरे लोगों ने किया है। यह काम ज़रूरी है। आप लोग काम करिये हम आपके साथ हैं, किसी ने अभी यहां कहा था कि आप साथ दें तो हम दुनियां बदल सकते हैं, लीजिये हम आपके साथ हैं दुनियां बदल कर दिखाइये।

अन्त में आप सबको शुभ कामनायें।

**आयुर्वेद महासम्मेलन पत्रिका, फरवरी 1994**

# Annexure-III

## Copy of Government of India Notification regarding Change of Name of Department of ISM & H to AYUSH

No.1/22/1/2003-Cab.(i)
GOVERNMENT OF INDIA (BHARAT SARKAR)
CABINET SECRETARIAT (MANTRIMANDAL SACHIVALAYA)
RASHTRAPATI BHAVAN
****

New Delhi, the 11th November, 2003

The undersigned is directed to circulate herewith for information a copy of the notification dated 11th November, 2003 by the President under clause (3) of article 77 of the Constitution regarding Amendment to the Government of India (Allocation of Business) Rules, 1961.

(P. Gopalakrishnan)
Director (Cabinet)
Tele: 23015802

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(To be published in Part II, Section 3, Sub - section (ii) of the Gazette of India, Extra Ordinary, dated the 11th November, 2003)

Doc. CD- 464/2003

RASHTRAPATI BHAVAN
NEW DELHI

Notification

Dated the 11th November, 2003

S.O. ______________ (E).- In exercise of the powers conferred by clause (3) of article 77 of the Constitution, the President hereby makes the following rules further to amend the Government of India (Allocation of Business) Rules, 1961, namely:-

1. (1) These rules may be called the Government of India (Allocation of Business) (Two hundred and seventy Amendment) Rules, 2003.

(2) They shall come into force at once.

2. In the Government of India (Allocation of Business) Rules, 1961,-

(1) in the First Schedule, under the heading "13. Ministry of Health and Family Welfare (Swasthya aur Parivar Kalyan Mantralaya)", for the sub-heading "(iii) Department of Indian Systems of Medicine and Homoeopathy (Bhartiya Chikitsa Paddhati aur Homoeopathy Vibhag)", the following sub-heading shall be substituted, namely:-

"(iii) Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) (Ayurveda, Yoga aur Prakratik Chikitsa, Unani, Siddha aur Homoeopathy (AYUSH) Vibhag)";

(2) in the Second Schedule, under the heading "MINISTRY OF HEALTH AND FAMILY WELFARE (SWASTHYA AUR PARIVAR KALYAN MANTRALAYA)", for the sub-heading "DEPARTMENT OF INDIAN SYSTEMS OF MEDICINE AND HOMOEOPATHY (BHARTIYA CHIKITSA PADDHATI AUR HOMOEOPATHY VIBHAG)", the following sub-heading shall be substituted, namely:-

"Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) (Ayurveda, Yoga aur Prakratik Chikitsa, Unani, Siddha and Homoeopathy (AYUSH) Vibhag)".

A P J Abdul Kalam
President

[File No 1/22/1/2003-Cab.I]

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The descriptions, views, findings and recommendations contained in the Report are of the author and do not necessarily reflect the views of the Department of AYUSH.

# 2

# Research

# Research


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# 2
# Research Initiatives Benefiting the Public

## Introduction

There is worldwide interest in holistic systems of healthcare especially their role in the prevention and management of chronic diseases and in particular, for conditions where allopathy has little to offer. Seven percent of India's population is in the 60+ age group. With the prospect of this percentage doubling in the next 15 years the country has to gear itself up for providing healthcare to millions of elderly people particularly those living in urban India where the joint family system is on the decline. There is therefore a search for anything that can maintain well-being and prevent illness. With increased life expectancy the burden of chronic diseases is bound to grow and non-communicable diseases particularly diabetes mellitus, cardio-vascular diseases, cancer, stroke and arthritis are predicted to become major health problems. A search for alternatives, adjuncts and adjuvants that can help ward off these diseases or mitigate pain and suffering has led to renewed interest in Ayurveda and other Indian Systems of medicine.

A section of the general public is convinced about the strength of traditional medicine but there is a constant demand for scientific validation of the principles on which Ayurveda, Siddha and Unani (ASU) systems are founded, particularly in respect of the efficacy and safety of the therapeutics used. Such a demand had motivated a large number of investigators to launch clinical research and drug standardization studies. Although such projects have been pursued over decades, the outcomes have been limited. It was therefore felt necessary to extend an opportunity to all the important players to give their own version of what has been achieved from the public benefit point of view and to assemble the responses at one place. This chapter encapsulates the responses received and suggests some changes in approach, given the standing of the outcomes and the suggestions of experts.

In the case of ICMR as well as the research councils of ASU, a conscious effort has been made to exclude literary research or other aspects of research which, although valuable, do not produce outcomes that can be quantified in terms of direct medical benefits.

However, in the case of the Department of Biotechnology (DBT) since they are in the business of directly addressing the need to conserve and preserve plants used in traditional medicine (besides other responsibilities), and have undertaken extensive studies resulting in successful *in situ* and *ex situ* cultivation of medicinal plants, the Department's reply has been reflected as relevant.

## Methodology

Letters were written by the PI requesting the Secretary, Health Research and the Director-General of ICMR, the Director-General of CSIR, the Secretary, Ministry of Science and Technology and the Secretary, Department of Biotechnology to provide a description of the achievements made by the organizations in the area of research into traditional medicine in so far as the outcomes can be termed as having directly benefitted the public. It was requested that "promising leads" may be excluded so that the focus remains on what the public has actually received. All the organizations were cooperative. Personal meetings were held by the PI with Dr Katoch, DG, ICMR and the Secretary, Ministry of Science and Technology Dr. Ramasami. In the case of CSIR the Director-General Dr. Brahmachari convened a meeting where he asked the key directors of the relevant institutions of CSIR to join over video conference to discuss the approach and identify specific achievements worth including in the Report.

In the case of the Department of Biotechnology, the Secretary asked the PI to meet Dr. S. Natesh, Senior Adviser dealing with the subject.

As far as the research councils of ASU i.e., CCRAS and CCRUM are concerned, specific questions were posed to them which were responded to and have been incorporated as such. It goes without saying that the level of receptivity and the openness with

which responses were given by all the organizations was clearly possible only because the Department of AYUSH had addressed all the organization heads and requested them to give full co-operation to the PI. It is hoped that this account which brings out tangible, patient-centered achievements in the area of research in traditional medicine as reflected by the main scientific organizations would enable policy makers to understand the need for much greater integration and collaboration to derive optimum benefits from the funds that are allocated for research in traditional medicine. The organizations contracted are listed below:

1. Indian Council of Medical Research (ICMR)
2. Council of Scientific and Industrial Research (CSIR)
3. Department of Biotechnology (DBT)
4. Department of Science & Technology (DST)
5. Central Council for Research in Ayurveda and Siddha (CCRAS)
6. Central Council for Research in Unani Medicine (CCRUM)

## Indian Council of Medical Research (ICMR)

After a meeting with the Secretary and Director-General of ICMR Dr. VM Katoch, the PI requested for information/data on the work of ICMR with special reference to benefits that the systems had given the public in the area of traditional medicine.

In a letter the PI requested that note on any product that had emerged as an outcome using traditional knowledge about plants and their healing properties, contained in the codified texts of Ayurveda, Siddha and Unani or on the basis of oral knowledge may be made available. In particular, if the public had received any therapeutic or palliative substance as an outcome of scientific work done by ICMR it was requested to be described, giving the history in brief, the benefits extended through the product including its application for wider use through industry.

In addition, ongoing collaborations including the Golden Triangle project were requested to be described if the outcomes were tangible in terms public benefit derived through such efforts.

As far as patents in the pipeline or where discussions with Industry were on-going, a status paper which captured the benefits that are likely to become available was requested for.

The response of ICMR is summarized below:

1. As early as in 1964, the ICMR had initiated a large national project '**Composite Drug Research Scheme**' (CDRS) that aimed at investigating the medicinal use of traditional remedies. The CDRS took up the first inter-disciplinary research through the joint participation of botanists, phytochemists, traditional medical practitioners, pharmacologists and clinicians. In 1969, the CDRS scheme was transferred to the then newly created Central Council for Research in Indian Medicine and Homoeopathy (CCRIMH).

2. During 1983-84, ICMR revived this activity in the form of a large national centrally coordinated multi-disciplinary, multi-centric disease-oriented research project covering eight refractory diseases. Under this new strategy, ICMR focused on the known deficiencies and problems of working with traditional remedies *viz.,* quality control and standardization of the products used in trials. This was needed to generate evidence-based data on the efficacy of these medicines. Therefore, the focus was on the standardization of existing treatment modalities of traditional medicine and involving practitioners of these systems. In addition to the Allopathic doctors who conducted the clinical trials as per the globally accepted practices and standards, Ayurveda, Siddha and Unani representatives as also representatives of CCRAS and CCRUM participated in this new initiative which took off in 1984.

3. This was preceded by discussions during 1982-83 about the feasibility of undertaking large multi-centric clinical trials to find 'evidence-based-medicine'. Six areas were taken up with the addition of a new study on snake bite. Systems were established to ensure that high quality standardized formulations were made available using reputed laboratories and a scientifically acceptable system of study design. Two Centers for Advanced Research were established at the Central Drug Research Institute (CDRI), Lucknow and Regional Research Laboratory (RRL - now called the Indian Institute of Integrative Medicine), Jammu. CDRI focused on traditional remedies.

The RRL Advanced Centre focused on standardization and quality control of traditional formulations to support clinical trials planned at various centers.

## ICMR's Milestones in Benefiting Society through Traditional Medicine

**Ksharasutra:** Among the trials Ksharasutra, a medicated thread for the treatment of anal fistula was found to be a safe, ambulatory and cost effective alternative to surgery. Pharmacopoeial standards were laid down and the necessary dossiers were prepared including a video film on the procedure, as early as the 1990s. The material was handed over for inclusion in the Ayurvedic Pharmacopoeia. This thread is being widely used in various Ayurvedic hospitals and treatment centres and several research papers have been published in different scientific journals on the advantages of Ksharasutra over conventional allopathic treatment.

**Picroliv for Jaundice:** For viral hepatitis, the hepato-protective drug *Picrorrhiza kurroa* was found successful with new active principles kutkoside and picroside to be used together resulting in a combination called Picroliv (The compound has already undergone successful phase I and II clinical trials in India and is ready for phase III clinical trials since 2000). Several patents were filed by CDRI, Lucknow during 1985-95. *Finding:* The reason why this did not progress further is not known but the benefits to the public do not appear to have accrued as yet.

**Vijaysar for Diabetes:** Another compound Vijaysar *(Pterocarpus marsupium)* showed some promise become of consistently positive results but because Vijaysar is difficult to obtain due to its extinction the promise never became a reality. *Finding:* Since ICMR's work has proved its efficacy for diabetes, the work should not be closed as the findings have immense scope for public benefit.

**Jamun for Diabetes:** Jamun *(Syzygium cumini)* is another drug used for diabetes due to its medicinal properties. Four active compounds isolated from the fruit pulp have been characterized and also patented. *Finding:* The preparation is being evaluated by a Mumbai-based company for taking up clinical trials on human beings. This needs to be given utmost support and the follow up needs to be monitored by ICMR & Department of AYUSH for public benefit.

## Overall Findings

According to ICMR no preparation or drug from the traditional medical systems of India has reached the public although there are several promising leads. Only Ksharasutra that was practiced in some hospitals even before it was evaluated by ICMR continues to be used successfully for anal fistula. Many industries had shown interest; some took the samples for testing and evaluation. However, no industry has shown interest in large-scale commercial production.

Currently, two ICMR Centres of Advanced Research are working in the areas of traditional plant-based remedies and medicinal plants. The Centre for Advanced Research for Reverse Pharmacology in Traditional Medicine at Kasturba Health Society, Mumbai set up in 2007 broadly aims at developing safe and scientifically investigated Ayurveda-inspired effective phyto-pharmaceutical products as well as preventive or therapeutic modalities for identified disease conditions. The Centre for Advanced Research on DNA Fingerprinting and Diagnosis of Medicinal Potential in Plants from Eastern and North-Eastern States in India at the Bose Institute, Kolkata aims at providing authentic identification of plants used for medicinal and other trade-related purposes.

ICMR's note laments that drug development efforts in the Allopathic systems receive massive funding from Pharma Companies which enabled these industries to participate at a competitive level globally. But there is no such support available for traditional remedies.

## Council of Scientific and Industrial Research (CSIR)

A meeting was chaired by the Director-General of CSIR Prof. Samir K Brahmachari on 10$^{th}$ August, 2010. A video conference with the Directors of the relevant CSIR laboratories was also arranged. He requested the scientists to provide information/data to be incorporated in the Report relating to benefits that the ASU systems have given to the public.

Several interesting points emerged but the Principal Investigator requested the scientists to consider the following points while preparing their write-ups.

1. Since the purpose of the chapter on research was to highlight the benefits that people had

received as a result of research conducted, only products that had emerged should be described. More specifically if the findings were based on traditional knowledge about plants and their healing properties, contained in the codified texts of Ayurveda, Siddha and Unani, the benefits extended by the product were requested to be made available.

2. In addition, collaborations that were taking place during the last few years including the Golden Triangle project were requested to be described in case the outcomes are tangible in terms of benefits that have been derived through such efforts.

3. As far as TKDL was concerned, a status paper which captured the benefits that had been received through successfully combating the grant of patents based on traditional knowledge was requested to be made available giving up-to-date information which was quantifiable in terms of (i) patent applications successfully foiled and (ii) the returns in terms of achieving global primacy in this field.

CSIR's response was summarized under the following sub-headings:

i. NMITLI – Herbal Drug Development Project

ii. TKDL Project

iii. GTP Project

iv. Products Developed from Leads of Traditional Medicine

## i. NMITLI – Herbal Drug Development Project

The New Millennium Indian Technology Leadership Initiative (NMITLI) is the largest R&D scheme to boost public-private-partnership efforts in the country. It looks beyond today's technology and thus seeks to build, capture and retain for India a leadership position by synergizing the best competencies of publicly funded R&D institutions, academia and private industry. Government finances play a catalytic role. NMITLI promotes innovation - centered scientific and technological developments as a vehicle to attain for Indian industry a global leadership position in selected niche areas.

CSIR launched a fully funded NMITLI project in 2002 to enable India to occupy a global leadership position in selected areas, including Ayurveda.

Herbal formulation for degenerative disorders like diabetes, osteoarthritis and rheumatoid arthritis, common hepatic disorders as well as for treatment of psoriasis have been validated and developed based on Ayurvedic concepts and using the reverse pharmacology approach.

### Diabetes

The formulation comprises a standardized aqueous extract of a single herb. Pre-clinical studies in *ex vivo* animal models showed DNA protection, anti-inflammatory and anti-hyperglycemic activity. The formulation has shown specific pharmacological action pertaining to protection against STZ (Streptozotocin) induced damage, increase in angiogenesis, decrease in blood sugar levels in STZ induced hyperglycaemia models and a fructose fed model. Limited multi-centric clinical studies in patients uncontrolled on existing drugs, such as sulphonylurea and metformin, indicated a potential for the formulation as an anti-hypergylcemic, post-prandial insulin sensitizer with potential for use in diabetic complications e.g. cataract. The formulation is shown to be an effective adjuvant to sulphonylureas and metformin, with decreased dosage requirement. It also showed improved quality of life parameters.

Discussions are going on with industry for transfer of knowledge and preparation of a product dossier for commercial exploitation in India and its further development for global positioning through elaborate Phase III clinical trials.

### Arthritis

The standardized formulation for treatment of painful knee osteoarthritis comprises three herbal extracts. From a series of studies involving permutations and combinations of identified botanicals, the best acting formulations were selected based on pre-clinical as well as on exploratory clinical performance in controlled, randomized trials. The formulations were finally evaluated in a 24 week, four arm drug trial (designed for equivalence with 80% power, $p=0.05$) on 440 patients. Analgesic rescue medication was not used in the final drug trial. The study has demonstrated the Ayurvedic formulations to be equivalent to standard doses of Celecoxib and Glucosamine, both used orally, in the treatment of painful OA knees. The safety profile of Ayurvedic formulation was better than Celecoxib. The

knowledge is ready to be transferred to an interested party for public benefit.

### Hepato-cellular Protection

A standardized poly-herbal formulation comprising hydro-alcoholic extracts of 12 herbs was developed and validated through limited multi-centric clinical studies. The formulation was shown to be efficacious in a wide spectrum of liver diseases viz. infective viral hepatitis, drug induced tuberculosis, and metabolic non-alcoholic steato-hepatitis or NASH with silymarin and conventional drugs as comparator. It showed reduction in the acute phase inflammatory response and bilirubin in hepatitis B, protection against toxemia in patients on AKT therapy. Studies show hepato-protection with better clinical recovery and quality of life parameters.

### Psoriasis

Psoriasis is a chronic skin condition, which is recognized for its peculiar clinical symptoms characterized by circumscribed red patches covered with white scales resulting in itchy flaky skin. It ranges from a few spots to large areas all over body. Psoriasis frequently affects the face, scalp, trunk and limbs. No preventive/curative therapy exists for psoriasis. The available drugs and therapy provide only symptomatic management.

A single plant-based oral herbal anti-psoriasis formulation has been discovered which has shown quick and painless remission for extended periods of time. It reduces the Psoriasis area and Severity Index (PASI) score by 90% in affected persons. IND, Phase-I and Phase-II clinical trials have been completed. Presently the formulation is undergoing Phase-III clinical trial.

## ii. Traditional Knowledge Digital Library (TKDL) Project

TKDL is a proprietary and original database. TKDL integrates diverse disciplines such as Ayurveda, Unani, Siddha, modern medicine and modern science; it is available in several languages including Sanskrit, Arabic, Urdu, Persian, Tamil, English, Japanese, Spanish, French and German. TKDL is based on 148 books of Indian Systems of Medicine, which are available at a cost of US$ 1000. These books are the *prior art* and can be sourced by any individual/organization. TKDL acts as a bridge between these books and international patent examiners. The TKDL technology has created a unique mechanism through which a Sanskrit *shloka* can be read in German by a patent examiner at any International Patent Office on a computer screen.

TKDL was started as a collaborative project between Department of AYUSH and CSIR and the aim was to prevent misappropriation of codified traditional knowledge contained in Ayurveda, Unani and Siddha by claiming patents before International Patent Offices. Its genesis dates back to efforts to refute patents on the wound healing properties of *Turmeric* at the USPTO and the anti-fungal properties of *Neem* at EPO. In 2000, a TKDL expert group estimated that about 2000 erroneously patents concerning Indian systems of medicine were being granted each year at the international level, mainly due to the fact that India's traditional medicine knowledge was confined to Sanskrit, Hindi, Arabic, Urdu and Tamil, which were neither accessible nor understood by patent examiners abroad.

TKDL has overcome these language and format barriers by scientifically converting and structuring the available information into 34 million A4 size pages of the ancient texts in five international languages, namely, English, Japanese, French, German and Spanish, with the help of information technology tools and a novel classification system – Traditional Knowledge Resource Classification (TKRC). The objective behind the creation of TKRC is not only to give a structured classification to Indian Traditional Medicine but also to use it as a retrieval tool.

Today, India through TKDL is capable of protecting thousands of ISM based medical formulations similar to those of Neem and turmeric. On an average, it takes five to seven years for opposing a patent granted at an international level which may cost $ 0.2-0.6 million to be set aside. TKDL has directly benefited the public in three ways. Firstly, unnecessary rebuttals funded at public cost have been avoided. Second, the country's primacy both in the area of traditional knowledge and its capacity to preserve, codify and expound on its knowledge base has been recognized. Thirdly, the public is assured that the repository of TKDL will be available on call for generations to come and the knowledge will not disappear with the passage of time.

India has signed TKDL Access Agreements with

- European Patent Office (EPO) (February, 2009)
- German Patent Office (October, 2009)
- United States Patent & Trademark Office (November, 2009)
- United Kingdom Patent Office (February, 2010)
- Canadian Intellectual Property Office (September, 2010).

Negotiations are under way to conclude the Access Agreement with the Intellectual Property Office of Australia and the Intellectual Property Office of New Zealand.

A significant impact has already been realized at EPO during the last 18 months. Beginning July 2009, a TKDL team has identified 200 patent applications at EPO which concern Indian systems of medicine and third party TKDL evidence has been filed at EPO. In two such cases EPO has already set aside its earlier intention to grant patents after it received TKDL evidence. In one case the applicant modified his earlier claims. In another 23 cases, applicants decided to withdraw their four-to-five year old applications on being confronted with TKDL evidence which is a tacit admission of bio-piracy by the applicants. It is expected that in the balance 175 cases, either EPO would reject these applications or applicants themselves would withdraw their wrong claims/patent applications in the coming months.

India has also identified more than 400 such pending patent applications at USPTO, which are based on Indian Systems of Medicine. Pending patent applications have been identified at the patent offices in Canada, the UK and Australia. It is expected that all these pending patent applications would be cancelled by the respective patent offices or will get withdrawn by the applicants.

India is the only country in the world which has set up an institutional mechanism (TKDL) and is able to prevent grant of wrong patents through an e-mail and at zero cost. Other countries need to fight for 10-12 years and have to spend millions of US dollars to meet legal and other expenses even for opposing a single patent.

A recent study carried out by a TKDL expert team has revealed a sharp decline (44%) on filing of patent applications concerning Indian systems of medicine. TKDL is therefore proving to be an effective deterrent against bio-piracy.

The details of applications where EPO based on TKDL evidence decided to set aside its earlier intention to grant patents and details of applications filed at EPO where applicants themselves decided to withdraw their claims/patent application after they were confronted with TKDL evidence are attached in **Annexure-I.**

## iii. Golden Triangle Project (GTP)

The Golden Triangle Partnership (GTP) Programme was launched in the year 2005 as an innovative scheme with Department of AYUSH, ICMR and CSIR as equal partners to study Ayurvedic formulations/ medicines using modern tools and technologies for: (1) Validating these as safe and efficacious therapies for Indian and global use. (2) Identifying a few formulations as complementary agents to modern drugs. (3) Helping Indian traditional drug industry to scientifically standardize the raw materials and finished products for global acceptability of these drugs.

Under the programme CSIR was entrusted with the responsibilities of (i) standardization of identified Ayurvedic formulations and their ingredients based on marker compounds and (ii) Physico-chemical analyses and toxicity studies of eight herbo-mineral preparations namely *Rasa Sinduar, Kajjali, Rasa Manikya, Basanta Kusmakara Rasa, Arogya Vardhini Vati, Maha Yogaraj Guggulu, Makaradhwaja* and *Mahalaxmi Vilas Rasa.*

**Standardization of Ayurvedic Formulations:** CSIR carried out complete standardization studies using modern physico-chemicals and analytical technologies on the material received. Standardization of herbal formulations and raw materials was carried out based on microscopic and macroscopic examination, pharmacognostic studies, microbial contamination, heavy metals and pesticide residue content, aflotoxin and chemical analysis based on quantitative determination of the chemical markers in most of the cases.

**Chemical analysis and Toxicity Studies of Herbo-Minerals:** The physico-chemical analyses of all the above mentioned eight herbo-mineral preparations were completed viz. the physical and chemical characterization was carried out by National

Chemical Laboratory (NCL), Pune; Indian Institute of Chemical Technology (IICT), Hyderabad and National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram. The 90 days sub-chronic toxicity studies were carried out on animals. The study reports of all eight herbo-minerals have been completed and reports submitted to CCRAS/Department of AYUSH.

According to CSIR these are the most comprehensive studies ever carried out on Herbo-minerals and help in local as well as global positioning of traditional knowledge.

### iv. Products Developed from Leads of Traditional Medicine at IIIM, Jammu

(i) The use of piper has been referred to regularly in the Ayurvedic formulations. As a result of extensive R & D, it has been found that piperine isolated from *Piper nigrum* acts as a bioavailability enhancer for specific drugs. Using piperine, a new formulation has been developed in this institute for tuberculosis patients in which the dosage of Rifampicin has been reduced to less than half thereby reducing the toxicity caused by long term use of Rifampicin. The formulation has been licensed to Cadila Pharmaceuticals, Ahmedabad. Cadila Pharma in collaboration with IIIM, Jammu conducted all the phased clinical trials as per the requirement of DGCI. The product has been launched in the market on 1$^{st}$ November, 2009 by the trade name Resorine.

(ii) *Vitex negundo* is a plant known for its medicinal properties. Extensive research work was conducted at IIIM, Jammu. A fraction with two markers compounds was standardized which showed strong hepatoprotective activity. It was licensed to Medley Pharmaceuticals, Mumbai, which has launched the product by the trade name **Liv-1** in the market.

(iii) *Boswellia serrata* is also mentioned for its use in four conditions of arthritis. A formulation based on marker compounds was standardized and developed for use in arthritis. The technology was transferred to Gufic India, which is marketing the product as an anti-arthritic preparation.

(iv) *Tinospora cordifolia* has special mention in Ayurveda for its use as an immunomodulator and is adaptogenic activity. IIIM, Jammu standardized the agrotechnology of this plant and also developed a process for the preparation of a standardized extract based on two marker compounds. This technology was transferred to M/s Nicholas Piramal (Piramal Life Sciences), Mumbai.

(v) Based on Ayurvedic literature, *Withania somnifera, Emblica officinalis, Bacopa monnieri, Curcuma longa* and *Tinospora cordifolia* find repeated use in many of the ayurvedic formulations. Four new formulations have been developed as positive health promoters for aging, cancer and diabetes patients to increase the quality of life among the patients suffering from these diseases. These formulations are presently undergoing clinical trials and are registered with clinical trials registry of ICMR, New Delhi.

## Department of Biotechnology (DBT)

Department of Biotechnology (DBT) is engaged in the following activities:

- ***In situ* conservation:** Establishment of biosphere reserves, national parks, wildlife sanctuaries, sacred groves and other protected areas are examples of *in situ* method of conservation. A few such conservation areas have been declared as medicinal plant *in situ* conservation areas. Forests in the three Southern States of Kerala, Tamil Nadu and Karnataka are being utilized through the joint efforts of the forest department of these states and Foundation for the Revitalisation of Local Health Tradition (FRLHT), Bangalore.

- ***Ex situ* conservation:** Conservation of medicinal plants *ex situ* (outside the natural habitat) is undertaken by cultivating and maintaining plants in botanical gardens and parks through long – term preservation of plant propagules in gene banks (seed bank, pollen bank, DNA banks etc) and in plant tissue culture repositories and by cryopreservation.

- DBT established the country's first National Facility for Plant Tissue Culture Repository (NFPTCR) at the National Bureau of Plant Genetic Resources (NBPGR), New Delhi, in 1986. This facility has carried out *in vitro* conservation of several threatened agri-

horticultural species including medicinal plants. NFPTCR has taken a lead in cryopreservation of agri-horticultural species including medicinal plants such as *Allium tuberosum, Dioscorea spp.* and *Rauvolfia serpentina*.

- DNA Bank of medicinal and aromatic plants has been created at Central Institute of Medicinal & Aromatic Plants (CIMAP), Lucknow under the auspices of National Gene Bank of Medicinal & Aromatic Plants established by the DBT. A total of 562 accessions of 35 species are conserved in the DNA Bank at CIMAP, Lucknow. The important species whose DNA is conserved include: *Artemisia annua, Alliam sativum, Bacopa monnieri, Catharanthus roseus* and *Taxus wallichiana.*

- DBT has established a network of four National Gene Banks (NGB) dedicated to medicinal and aromatic plants. These are:-

  1. Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow;
  2. National Bureau of Plant Genetic Resources (NBPGR), New Delhi;
  3. Tropical Botanical Garden and Research Institute (TBGRI), Trivandrum and
  4. Regional Research Laboratory (RRL/IIIM), Jammu.

The main objective of the NGBs is to conserve medicinal and aromatic plants of endangered/ threatened/rare species of proven medicinal value and those extensively used in the traditional systems of medicine.

These banks are equipped with state-of-the-art facilities to carry out conservation of the materials. Each gene bank has four major components: field gene bank, seed bank, *in vitro* bank and cryobank.

DBT was requested to provide information on the following:

a. Rare/threatened/endangered species of proven medicinal value, used in traditional medicine specifically.

b. Plants extensively used in Indian traditional system of medicine.

c. Plants which are difficult to propagate.

d. Plants with significant R&D leads for the future development of drugs.

e. Plants which are commercially important.

DBT sent the following responses:

a. Farmers/cultivators are getting well-characterized quality planting material of rare, endangered and threatened species such as *Aconitum heterophyllum* (Atees), *Nardostachys jatamanasi* (Jatamansi), *Picrorhiza kurrooa* (Kutki), *Sassurea costus* (Kuth, Kustha), *Swertia chirayita* (Chirata, Charayatah) These are used in Indian traditional systems of medicine;

b. Scientists/Researchers are able to obtain authentic plant material from the repositories having significant R&D leads for future development of modern drugs;

c. Farmers/Cultivators are getting well-characterized quality planting material of species such as *Podophyllum hexandrum* (Bankakri), *Nothapodytes nimmoniana* (Ghanera), *Taxus wallichiana* (Himalayan Yew) etc. which are a source of high-value phyto-pharmaceutical compounds.

Germplasm Bank for Ayurvedic medicinal plants has been established at Arya Vaidya Sala, Kottakal, Kerala with 1686 accessions belonging to 145 species. A seed bank consisting of 109 accessions belonging to 44 species has also been established. The Herbarium contains 600 species details of which have been preserved. The Raw Drugs Museum contains 256 samples. A data based for images and a field gene bank has also been developed alongwith a herbarium and a Museum. Ten species are being conserved in an *in vitro* bank. Protocols for *in vitro* conservation of *Holostema ada-kodien, Kaempferia rotunda, Trichosanthes cucumerina, Geophila repens and Rubia cordifolia* has been developed. Efforts have been initiated for utilization of a collection of rare and endangered medicinal plants involving researchers and industry.

## Department of Science and Technology (DST)

Department of Science and Technology (DST) was requested to provide information on the projects/ products that have given direct benefits to the public through the work undertaken or supported by the DST over the years, relating to the Traditional Medicine Sector. The following response was received from DST in relation to Traditional Medicine.

### Drugs and Pharmaceuticals Research Programme (DPRP)

DPRP scheme was initiated by DST in 1994-95 for promoting R&D in the drugs and pharmaceuticals sector. It aims at synergising the strength of R&D institutions and Indian pharmaceutical industry for the discovery and introduction of new drugs, covering all systems of medicine. Thirty six projects are continuing at present **(Annexure-II).** Of these, 27 projects were collaborative projects awarded between 2003 and 2010 and have been initiated with universities and institutes. Another five projects were in the nature of facility projects and another five were loan projects. None of these projects awarded to institutions, Universities and manufacturers were reported to have yielded any outcomes of importance from a public benefit point of view as yet.

The Secretary, DST was requested to express his personal views on the following issues and his replies are carried in full in the ensuing portion relating to responses of experts.

## ASU Research Councils

There are four Research Councils under Department of AYUSH which coordinate scientific research in different aspects of respective systems, both fundamental and allied. These Councils which have been established for Ayurveda and Siddha, Unani, Homeopathy, Yoga & Naturopathy are apex bodies responsible for research in the concerned systems of medicine. They are fully financed by the Government of India.

In this sub-chapter, the focus is on the benefits that have accrued to public through efforts made in the field of Clinical Research and their outcomes, confined only to Ayurveda, Siddha and Unani medicine.

### Methodology

Both the Councils were asked to furnish the information on following aspects. A copy of the questionnaire is at **Annexure-III**.

1. Top 5-6 Research Projects undertaken for the last 10 years which have led to the identification of products which in the view of the Council were able to provide substantial mitigation/ cure in specific medical conditions. Some of the questions are as follows:

    - Indicate the place/places where the research was undertaken separately for each such product, the number of patients who were treated and the reason why the product is considered as being more "successful" in terms of the outcome, than other medically oriented research studies undertaken over the last 10 years.
    - Indicate briefly a description of the medical condition/disease for which the product was found useful and give an idea of the extent of such usefulness and the basis on which the conclusion about such usefulness has been decided.
    - Indicate the reason why the patent applied for may not have been granted along-with the date of filing of the patent and the efforts made to undo any shortcomings pointed out by the patent granting authority.
    - What steps have been taken to make practitioners aware about the usefulness of the product? Are the products being made available to practitioners other than the centres run by the Council?
    - What has been the response of the practitioners and on what basis is the response being given?
    - One of the aims of biomedical research is to give leads to industry so that they can use the research work done to manufacture and market the products for the benefit of the public on a wider scale. If the identified products/leads have not been made available to industry then how has the principle of cost effectiveness been satisfied?
    - In respect of each product please indicate whether there are any issues of availability of raw drugs, standardization which would make bulk manufacture difficult?

2. Description of those drugs which appear to have largest application in hospital or community settings after excluding the treatment of communicable diseases, i.e. Malaria, Filariasis, etc. for which a well established and successful treatment regimen

is available in the Allopathic system of medicine.

3. To indicate the number of patients who were included in the last 10 years under various clinical Research Projects and independently by providing the treatment in the IPDs and OPDs run by the Council in various units throughout the country.

4. What better system is suggested for improving the offtake of the most promising products which have been identified as a result of clinical research?

## Central Council for Research in Ayurveda and Siddha (CCRAS)

Central Council for Research in Ayurveda and Siddha (CCRAS) presented itself as an apex national body engaged in promoting research in Ayurveda and Siddha through a network of 35 Institutes/ Centres/Units located all over the India. It is also engaged in forging strategic alliances with similar clinical and research establishments in order to understand through research the cause, prevention and management of diseases. It is also expected to formulate patterns of research on scientific lines related to fundamental as well as applied aspects of Ayurveda and Siddha, propagate knowledge and assist institutions in conducting research.

More specifically, CCRAS undertakes a Clinical Research Programme, the cultivation of Medicinal Plants as well as Medico-Ethno Botanical Surveys, Pharmacognosy and Pharmacological Research and Literary Research. It works as the convener and coordinator for the Ayurvedic Pharmacopoeia Committee and the Golden Triangle partnership projects.

## Major Research Projects Undertaken During the Last 10 Years by CCRAS

The Council reported about 10 coded formulations which were developed but only standardization and pre-clinical studies were undertaken. No clinical trial has apparently been completed to show the efficacy of the products. In the past (20 years), the Council had obtained patents for anti-malarial formulation in the year 1980 and for Psoriasis in 1987 but not after.

When asked whether the non-patented drugs formulated by the Council are in use for treatment, it was stated that a large number of beneficiaries were being treated by using the Council's formulations as well as other formulations in 18 CCRAS units where the outcomes were found to be "very positive". The basis on which the Council has concluded that the formulations were found to be efficacious was not spelt out but the diseases where particular success was claimed were *Amavata* (Rheumatorid arthritis), *Amlapitta* (Hyperacidity), *Svasa* (Bronchial asthma), *Sandhi vata* (Osteo-arthritis), *Gridhrashi* (Sciatica), *Arsha* (Hemorrhoids), etc.

**During the last 10 years,** the Council has initiated/ conducted the following clinical trial:

### Clinical evaluation of anti-fertility effect of Pippalyadi Yoga, a classical herbo-mineral formulation

The National Committee for Research in Human Reproduction (NCRHR) reviewed the data about the contraceptive properties of different alternate systems drugs. An Expert Committee under the Chairmanship of Prof. Ranjit Roy Chaudhury Emeritus Professor, National Institute of Immunology (NII), New Delhi was set up to explore the possibility of developing a new and effective oral contraceptive. After extensive deliberations, it was decided to take up the clinical evaluation of Anti-fertility effect of Pippalyadi Yoga, a classical herbo-mineral formulation based on an Ayurvedic classical text Bhavaprakash. This was done on the basis of Intramural Research conducted by CCRAS. The toxicological and preliminary teratogenic study was conducted at NII, New Delhi. No toxicological or teratogenic effect was reported. An extensive teratogenicity study was conducted by *National Institute for Research in Reproductive Health* (NIRRH). No teratogenicity was observed.

The drug was supplied by National Institute of Pharmaceutical Education and Research (NIPER) to all the centers in the month of February, 2004 and the trial was restarted in the month of March-April, 2004 and continued up to December, 2006.

The progress reports received from the trial centers reported that the failure rate in the trial appeared to be unacceptable compared to conventional oral contraceptives. Hence, it was decided that the trial should be kept in abeyance for the time being.

*Finding:* The public did not get a contraceptive product despite considerable efforts which were made.

### Research on the feasibility of introducing Ayurveda in the National Reproductive and Child Health Programme at Primary Health Centre (PHC) level

This is a collaborative research programme undertaken with ICMR for integration of Ayurveda and Siddha in to the Reproductive and Child Health Programme. Initially it is under implementation in two districts of Himachal Pradesh. The Ayurveda Regional Research Institute, Mandi and the Government Ayurveda College, Paprola have not given the outcomes.

*Finding:* This research initiative is well-intentioned but its inclusion in the RCH programme seems to be far from reaching the stage of being incorporated in the public health programme.

### Process Patents Obtained

The Council has got a process patent for Bal Rasayan, a herbo-mineral preparation for general immunity and building children, in 2002. The patent was given to a pharmaceutical company M/S Upkaran Pharma in 2002 and an amount of Rs. 1,50,000/- has been received.

The patent for Ayush Ghuti is under process with NRDC as a herbo-mineral preparation meant for cough, cold, fever and diarrhoea.

*Finding:* No details of the status of securing the patent were provided.

### Ksharasutra (A medicated thread for ano-rectal diseases)

Patent was obtained in 2002. It was indicated that NRDC was "approaching some industries for its commercialization". The medicated thread is being used in clinical treatment in any case.

*Finding:* After nine years, commercialization of the medicated thread remains uncertain. The use of this medicated thread is not as widespread as one might have expected particularly as there are several published papers besides ICMR's published work to show the effectiveness of ksharasutra treatment.

### Patents filed but not approved so far

- A process for the preparation of a composition from *Swertia chirata* Buch. Ham. (Gentianaceae) having anti-carcinogenic (cancer preventive) and anti-tumour (cancer therapeutic) action. The process patent was filed on 26.3.2002.

  *Finding:* No progress was indicated by CCRAS.

- A Process for the Isolation of Amarogentin, Seco-Iridoid Glycoside possessing anti-carcinogenic (cancer preventive) and anti-tumour (cancer therapeutic) action. The process patent was filed on 26.3.2002.

  *Finding:* No progress was indicated by CCRAS.

- An Anti-Cancer compound Amarogentin, A Seco-Iridoid Glycoside with Anti-Carcinogenic (Cancer Preventive) and Anti-tumour (Cancer Therapeutic) Action. Patent Application No. 166/Cal/2002 dated 26.3.2002.

  *Finding:* It was reported that NRDC is pursuing the matter for obtaining the patent. No progress was made available.

- A process for the preparation of an Ayurvedic herbal compound preparation AYUSH MANAS for mental retardation. It was stated that the document has been transferred to NRDC and NRDC is approaching the industries for commercialization. It was also stated that the clinical trial is going on at two collaborative centres.

  *Finding:* Benefits to the public are unlikely to accrue in the near future if the clinical trial is still in progress and the process patent filed in 2009 is still pending.

- A process for the preparation of an Ayurvedic herbal compound "AYUSH QOL-2A" supportive therapy for the improvement of quality of life in HIV/AIDS patients has been transferred to NRDC but commercialization is awaited. It was reported that a clinical trial was being initiated at ICMR.

  *Finding:* The process is also at a nascent stage and benefits to the public might take a long time to become available.

Apart from these areas, according to CCRAS, the management of Bronchial asthma, Rheumatoid arthritis, Osteo-arthritis, has been successful. The details given by the Council are summarized below:

Top four areas where Council's work has benefited the public:

## Bronchial asthma *(Tamaka Swasa)*

Bronchial asthma is a chronic debilitating disease and the causative factors include as allergies as well as genetic factors. Growing environmental pollution with rapid and extensive industrialization have been responsible for aggravation of this disease. The alarming rise in the incidence of bronchial asthma in metropolitan cities requires that a simple and easily accessible treatment is found. CCRAS reported that three studies were conducted in which 1000 patients were treated with different treatment regimens namely Sameerapanaga Rasa, Sirish Twak Kwatha, Pippali Vardhaman Ksheerapaka with Shodhana therapy.

Bronchial asthma *(Tamaka Swasa)*

**Research data :** 1998-2007

Number of patients : 1000

(*Reference : Annual Report 2007-08)

**OPD data**

Period : 2004-09

Number of patients: 34,319

Further, CCRAS is providing treatment for bronchial asthma in OPDs operating at different clinical units functioning under the Council. A total of 34,319 patients have been treated successfully during the period 2004-09.

## Diabetes mellitus *(Prameha-Madhumeha)*

CCRAS reported that many herbal drug combinations are being successfully used for the control of hyperglycemia especially in non-insulin dependent Diabetes mellitus. Several drugs and combinations have been investigated in experimental and clinical studies.

This study has been taken up in CCRAS' Central Research Institute (Ayurveda), New Delhi as well as other centers. During 1998 and 2007, 81 patients were treated and the fasting and post-prandial blood sugar was assessed at various stages of treatment, besides clinical evaluation. The results indicated statistically significant reduction in fasting and post-prandial blood sugar levels along with clinical improvement and improvement in quality of life.

Diabetes mellitus *(Madhumeha)*

**Research data :** 1998-2007

Number of patients : 81

(*Reference : Annual Report 2007-08)

**OPD data:**

Period : 2004-09

Number of patients: 13,674

Further, CCRAS is providing treatment at OPD level at different clinical units and 13,674 patients have been treated successfully during the period 2004-09 with the identified drugs.

## Haemorrhoids *(Arsa)*

The treatment is generally, preventive, symptomatic and palliative in modern medicine. Surgery is resorted as a last resort. Certain Ayurvedic para-surgical procedures, namely *Ksharakarma, Ksharasutra* and *Raktavasecana* were used by applying medicinal leeches.

Haemorrhoids *(Arsa)*

**Research data :** 1998-2007

Number of patients : 2294

(*Reference: Annual Report 2007-08)

**OPD data :** 2294

A study has been conducted on *Ksarasutra* application, an internal medication Kankayan Vati and Triphala Churna and local application of Kashishadi Taila on 2294 patients. The results were found encouraging in terms of relief in signs and symptoms of the disease and improvement in quality of life with lower recurrence rate.

## Rheumatoid arthritis *(Amavata)*

Ayurveda has a unique approach assigning a crucial role for gastro-intestinal dysfunction in the treatment of the disease. The Council indicated that a number of herbal and herbo-mineral drugs and *Panchakarma* therapy have been used and evaluated in the management of Rheumatoid arthritis at the Council's centres.

Rheumatoid arthritis *(Amavata)*

**Research data :** 1998-2007

Number of patients : 1520

(Reference: Annual Report 2007-08)

**OPD data**

Period : 2004-09

Number of patients: 35,963

The outcomes of these studies indicate that the patients of Rheumatoid arthritis could be managed well with Ayurvedic therapies. It was also noted that the effects on these patients were lasting and relapse was rarely observed.

It was reported that patients suffering from Rheumatoid arthritis were receiving effective treatment at OPD level in the clinical units of CCRAS. During 2004-09, 35,963 patients of Rheumatoid arthritis were treated in the OPD.

## Drugs which have community level application

The Council was asked to indicate areas which are suitable for being followed under Public Health Programmes. According to the response given, Ayurveda has good outcomes in the following areas:-

### (i) Enhancing quality and quantity of breast milk

In the area of enhancing the quality and quantity of breast milk, it was reported that standardization, safety/toxicity studies had been carried out and no significant changes were noted in the blood chemistry, haematology and weight of the experimental animal. Some mortality occurs in the animals when higher doses are given. The ingredients for use in the preparations for breast milk enhancement are:- Satavari (*Asparagus racemosus*), Zeera (*Cuminum cyminum*), Satapushpa (*Anethum sowa*) based on their pharmacological activities.

### (ii) Dysfunctional uterine bleeding

While clinical studies are going on, the ingredients used are from three plants, namely, Nagakeshara (*Mesua ferrea Linn),* Durva (*Cynodon dactylon)* and Laksha.

## Overall findings

1. From the experience of the research projects and patents sought by CCRAS in the last 10 years, it is evident that little has been achieved by way of tangible benefits accruing to the public through the patent route.
2. On the other hand, if CCRAS' Ayurvedic and Siddha formulations have led to improvement in the condition of patients or helped better clinical management, it is necessary for a wider public to be given access to this treatment on a voluntary basis.

## Central Council for Research in Unani Medicine (CCRUM)

The Council has been pursuing research studies covering different areas but this sub-chapter only deals with the area of clinical research which essentially refers to medical treatment administered under the research programme. The findings are based on the responses received.

Clinical treatment has been given to patients in two categories — either as a part of the research programme or as a part of general treatment offered. The Council has stated that since the drugs were developed on the basis of research and "the process patenting and patent rights is yet to be awarded, the drugs could not be made available in the market". That begs the question as to how treatment was being offered over decades if the drugs were to be restricted to patients who came only under the research programme, presumably after following a voluntary enrolment programme.

Over the last 30 years, not a single patent has been obtained by CCRUM. In most cases where success has been claimed patents have not even been filed. Wherever they have been filed, no indication was given of the present status except to say that they are "under process". The responses did not show that CCRUM was persevering with the applications or trying to ascertain from NRDC the reasons for delay or non-acceptance.

In response to the questionnaires the Council selected six diseases and in respect of these reported that almost two lakh patients had received treatment as part of clinical care throughout the country ranging over various periods during the last three decades. The Council claimed relative "success" in managing the six conditions and referred to specific drugs that had been used. In that case the drugs and treatment should be offered to a wider section of the public and not restricted to only those who happen to visit the small centers. The drugs are the same ones found in the classical texts, only the permutations and combinations have been altered on the lines of what an individual practitioner does, which is permitted by law.

## Vitiligo (Bars)

Vitiligo (which is known as Bars in Unani Medicine) is a disfiguring dermatological condition.

CCRUM initially started research on Vitiligo at its Central Research Institute of Unani Medicine (CCRUM), Hyderabad in the year 1972. Based on the reference available in the Unani classics, a number of new formulations were subjected to therapeutic trials in different treatment groups. The Hyderabad centre has so far registered over 85,771 patients of vitiligo from 1972 to 31st March 2010. Eleven formulations were extensively tried on a total of 29,734 patients fulfilling the criteria as per protocol.

The Council has applied for provisional patent. The content of the formulations (all plant-based) have been standardised and quality control parameters have been developed. Safety evaluation of these drugs has also been done at the Council's centres.

> Vitiligo *(Bars)*
>
> **Research data:** 1972-2010
>
> Number of research patients studied : 29734
>
> **OPD data**
>
> Period: 1972-2010
>
> Number of patients : 58037

These formulations have shown significant therapeutic effects in arresting the further appearance of new spots or execerbation in the size of the patches besides repigmenting the depigmented patches. The response varied from 62-89% depending on the chronicity, part of the body effective the type of patch and patient's own temperament.

No untoward side effect was noted with the use of these drugs even on long term use .A few cases of skin blisters were managed with coconut oil or external application of skin creams. The drugs were stated to be cost effective in comparison to modern drugs with an average treatment cost only Rs. 2 to 3 per day.

There is a great demand for providing treatment for Vitiligo patients particularly in the coastal regions including Kerala, Orissa, and West Bengal where the incidence of the disease is high compared to northern states.

## Sinusitis (Iltehab-e-Tajaweef-e-Anf)

Sinusitis is an inflammatory disorder of the upper respiratory tract which affects all groups within the population.

The treatment of Sinusitis in conventional medicine includes the use of antibiotics, antihistamines and decongestants. But continued use of strong medicines have side effects.

CCRUM initiated research on Sinusitis in the year 1980 at CCRUM, Hyderabad. Based on the classical references available a number of new formulations were prepared and subjected to therapeutic trials. Over the years 5,091 patients of Sinusitis were registered. Out of these 4,928 patients fulfilled the criteria as per protocol and were registered for the study. Trial of two different drugs were conducted in two separate groups first consisting of 2,948 patients and the second 1,980 patients. Over 93% patients responded to the treatment. Out of these over 54% showed 100% subsidence in the disease with radiological clearance using a particular combination; another 35% patients showed 100% subsidence with radiological clearance with treatment of the other combination. Assessment was made on the basis of subsidence in the clinical signs and symptoms and radiological clearance of Sinuses through X-ray examination.

> Sinusitis *(Iltehab-e-Tajaweef-e-Anf)*
>
> **Research data:** 1980-2010
>
> Number of research patients studied : 4928

The ingredients are all plant based and have been standardized and quality control parameters have been developed. Safety evaluations of these drugs have also been done at the Council's centres at Regional Research Institute of Unani Medicine at Aligarh.

The average duration of treatment is eight weeks. No untoward side effects were noted. Unani treatment provides non surgical intervention with few chances of recurrence. The drug is very cost effective and the daily treatment cost is Rs. 4 to 5 only. Duration of treatment varies from 2-3 months depending upon the chronicity of the disease.

The Council also extended treatment facilities for Sinusitis at other Centres.

## Infective hepatitis (Iltehab-e-Kabid)

Infective hepatitis is one of the most common liver disorders. Although it is a self limiting disease, it often persists over long periods leading to complications. There is no specific treatment for this disease in modern medicine and generally hepatoprotective drugs prepared from plant origin are recommended. Other options are expensive.

CCRUM started research on infective hepatitis at its centres at Hyderabad and Chennai. Based on the references available in Unani classics, eight formulations were subjected to screening in cases of infective hepatitis on a total of 2078 patients at Hyderabad and 1874 patients at Chennai. CCRUM data showed significant reduction in symptoms after three weeks and normalizing of the biochemical parameters. One particular formulation was reported to have given a highly positive therapeutic response. The assessment was on objective parameters. In the case of Hepatitis-B, E marker studies were also conducted.

> Infective Hepatitis *(Iltehab-e-Kabid)*
>
> **Research data:** 1980-2010
>
> Number of research patients : 3952

The drugs have been standardized and quality control parameters have been developed; safety evaluation has also been done. The uniqueness of this drugs is that they are effective in simple jaundice or hepatitis-A or hepatitis-E caused by contaminated water and also in the treatment of hepatitis-B virus by normalizing the biochemical parameters and improving the liver function.

The drug is available at all the clinical centers under the Council and is very cost effective. The per day treatment cost is Rs.3/-. One to three weeks treatment is required for simple jaundice, Hepatitis-A, Non-A, Non-B and Hepatitis-E. However, Hepatitis-B requires long term treatment ranging from three to six months.

## Rheumatoid arthritis (Wajaul Mafasil)

Rheumatoid arthritis is a chronic disease. The prevalence and incidence of Rheumatoid arthritis is twice more in women than men. The disease often deprives the patient of his independence and can disrupt the lives of family members and other care givers.

People with arthritis experience a decline in community involvement and difficulties at the work place. In spite of research advancement in the treatment of Rheumatoid arthritis, there is no cure. If the disease reaches a chronic stage the use of pain killers, steroids and corticosteroids becomes unavoidable. Based on references available in the Unani classics, CCRUM formulated six simple combinations and subjected them to therapeutic trials at different centres. Initially the work was started at Chennai in the year 1979 where preliminary screening of certain combination of drugs was done. The drugs showed significant therapeutic effects in the preliminary screening. Later more combinations were formulated and the trials were extended at others centres at Lucknow, Bhadrak, Mumbai, New Delhi, Srinagar and Bengaluru. Out of these six regimes that were subjected to therapeutic trials one particular coded combination of drugs was tested initially on 319 cases which showed 35% complete remission and 47% partial remission in the patients. In 18% there was no response to the treatment. Later 8,000 patients fulfilling the research criteria were registered for study. 7529 patients completed the study in different treatment groups. The cases were diagnosed on the basis of the signs and symptoms of the Unani classification and the cases were classified as per standard criteria of possible, probable, definite and classical stages.

> Rheumatoid arthritis *(Wajaul Mafasil)*
>
> **Research data:** 1979-2010
>
> Number of research patients : 8000
>
> **OPD data**
>
> Period : 1979-2010
>
> Number of patients : 42070

## Bronchial asthma (Zeequn Nafas)

Bronchial asthma is a chronic disease, which is the result of the inflammatory condition in the bronchi. The CCRUM initially started research on Bronchial asthma at the Clinical Research Unit, Chennai in the year 1972. Based on the reference available in the Unani classics some new drugs were prepared and subjected to preliminary screening at Chennai. Later in the year 1982 studies on bronchial asthma started at Allahabad, at Mumbai and Srinagar. Based on the findings of

preliminary screening at Chennai, some improved formulations were developed and subjected to therapeutic trials at different clinical centres. At Allahabad a coded formulation was evaluated on 2453 patients, and trial of another coded combination was under taken at Srinagar on a total of 2559 patients. A comparative trial of both these combinations was conducted at Mumbai on 1048 patients. Out of these one particular drug UNIM-352 emerged as the best drug for bronchial asthma.

Bronchial asthma *(Zeequn Nafas)*

Research data: 1980-2010

Number of research patients : 6007

**OPD data**

Period : 1980-2010

Number of patients : 4650

The Centre at Srinagar has emerged as a leader for the treatment of Bronchial asthma in the valley. This centre started clinical study on bronchial asthma in the year 1984.

In one particular group out of the 2559 patients registered, 2086 completed the trial. 1544 (74%) patients responded to the treatment. Response varied according to the type and severity of the disease. 479 (22%) patients showed complete remission, 646 (30%) major improvement whereas, 417 (19%) showed minor improvement. 544 (26%) patients showed no response. In the responding cases frequency of use of inhalers was reduced significantly. The quality of the life of the patients and their physical activities improved significantly. The drug acts as a bronchodilator and an antihistaminic, emulcifient and saline expectorant. It improves lung functions and corrects digestion as well.

The average duration of treatment is 120 days. No untoward side effect was noted with the use of these drugs.

In the Allopathic system the frequent use of bronchodilators, cortisone and inhalers provides only temporary relief. Unani drug UNIM-352 provides relief in signs and symptoms as well as reducing the severity and frequency of the attacks. The drug is reported to be cost effective.

### Kit Medicines

In its response, CCRUM also drew attention to various Kit medicines which had been found useful for treating common/seasonal ailments. There are 24 formulations in the kit and these are being prescribed at the Council's centres, in their mobile OPD's and in their health camps even today. The drugs are prepared out of common condiments and items used in cooking but they have been found to be useful for conditions like headache, skin problems, constipation, cough, body ache, boils, conjunctivitis and toothache. Commercial exploitation is already in progress and the council receives about Rs five lakh annually. The Council would like these medicines to be included in the ASHA's kits.

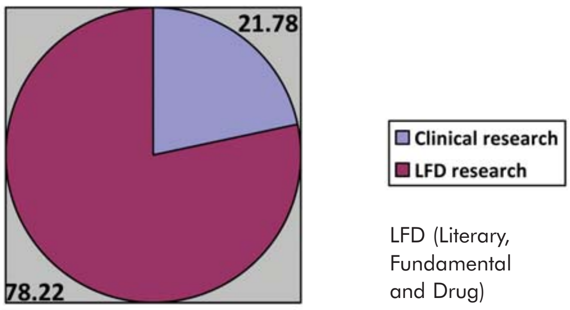
## Ayurveda Research Conducted in Educational Insitutions

**Research at doctoral and postgraduate levels:** A number of clinical research projects are taken up each year either as Extra Mural Research Project or in fulfillment of academic requirements. A bird's eye view of the topics and the institutions that contribute the most is available in a study conducted at Institute for Post Graduate Training & Research Centre (IPGT&RA), Gujarat Ayurveda University, Jamnagar. (Comparative research work could not be located for Siddha and Unani research.)

At present more than 60 Ayurveda colleges all over the country have started postgraduate courses in nearly 26 specialties of Ayurveda. Nearly **700 PhDs** have been awarded in Ayurveda for research work undertaken since the initiation of the postgraduate education in Ayurveda. More than **800 post-graduate theses** are submitted in a year as part of partial fulfillment of the post-graduation degree. The study found that hardly 100 research papers are published annually in Ayurvedic journals.

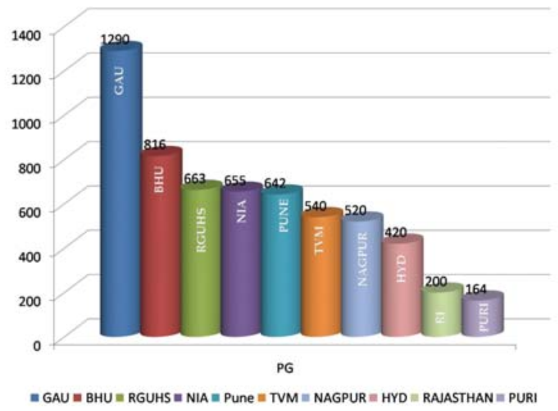
The second edition of "Researches in Ayurveda-2005" by Dr. MS Baghel, Director, IPGT & RA, Jamnagar contains the titles of 7500 theses. Among them, 1213 theses pertained to clinical studies; Clinical comparative studies accounted for 399 papers, randomized clinical trials and controlled clinical trials numbered 11 each. Clinical studies accounted for 21% (1634/7500) of the theses after examining all the research conducted from 1973 to 2005.

### Overall Academic Research – Area of Research

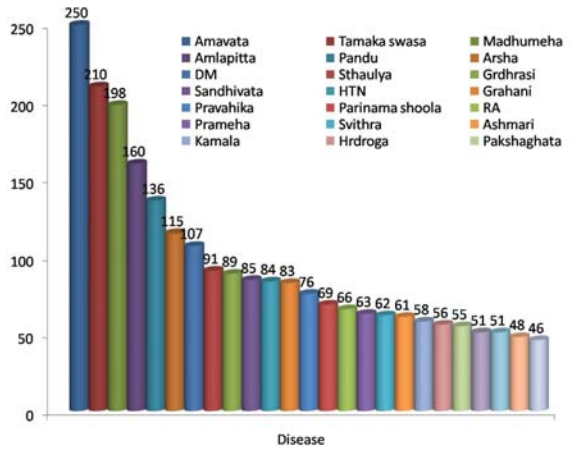



LFD (Literary, Fundamental and Drug)

### Overall Academic Research – Institution-wise -




GAU – Gujarat Ayurved University; BHU – Benaras Hindu University; RGUHS – Rajiv Gandhi University of Health Sciences; NIA – National Institute of Ayurveda, Jaipur; TVM – Trivandrum, Kerala; HYD – Hyderabad




Amavata – Rheumatoid arthritis; Amlapitta – Acid peptic disorders; DM – Diabetes mellitus; Sandhi vata – Osteoarthritis; Pravahika – Amoebiasis; Prameha – Diabetes; Kamala – Jaundice; Tamaka swasa – Bronchial asthma; Pandu – Anaemia; Sthulya – Obesity; HTN – Hypertension; Parinama shoola – Duodenal ulcer; Svitra – Vitiligo; Hridroga – Heart disease; Madhumeha – Diabetes mellitus; Arshas – Piles; Gridhrasi – Sciatica; Grahani – Irritable bowel syndrome; RA – Rheumatoid arthritis; Ashmari – Renal calculi; Pakshaghat – Paralysis.

### Clinical Research Priorities – Disease-wise

Rheumatoid disease like Amavata was found to be the most researched topic in PG clinical research. All available treatment modalities have been tried along with internal medications. Generally in clinical trials either a single drug is tried or known formulations are taken up on a particular condition. In the majority of the theses, comparative effect of Shodhana Chikitsa (Purificatory treatment) and Shamana Chikitsa (Palliative treatment) have been evaluated. After Panchakarma came into existence as a separate specialty, Panchakarma (Bio-purificatory therapeutic pentad) modalities have been compared with treatment of diseases by administering drugs.

All research work is mainly in the form of short sample studies. Even in the major Government supported research institutes the financial limit is Rs 10,000 per project. However, due to the paucity of published research in Ayurveda, such work is often quoted to claim an evidence base for the success of the treatment. In the majority of projects the sample size is very small and the sampling method is generally not specified. There seems to be polarization in respect of the clinical work undertaken, covering particular areas, which has hampered advancement of knowledge on other areas.

## Ayurveda in Peer Reviewed Journals

Scientific studies cannot make progress without the publication of research findings and authors must welcome and withstand peer review. Research in Ayurveda is, however, seriously handicapped by the paucity of peer reviewed journals which would appeal equally to scientists as to the Ayurvedic community.

A study done by Bhushan Patwardhan and Ashok DB Vaidya[1] clearly indicates that number and impact of scientific publications based on Ayurveda is far less as compared to Traditional Chinese Medicine (TCM).

1. Patwardhan, Bhushan and Ashok DB Vaidya. "Ayurveda: Scientific research and publications." *Current Science,* 97, no. 8 (2009).

The authors have searched and compared citations on Ayurveda (including the use of terms like Ayurvedic and Ayurveda), Yoga, TCM and acupuncture using science databases including *Scopus*, *Pubmed*, *Scirus* and *Google Scholar* (Table 1). TCM remained way ahead of Ayurveda in majority of the journals selected for this study (Table 2).

Table 1. Comparative citation* for Ayurveda and TCM in science database

| Category | *Scopus* | *Pubmed* | *Scirus* | *Google Scholar* |
|---|---|---|---|---|
| Ayurveda | 1216 | 451 | 80045 | 23900 |
| TCM | 16096 | 16191 | 137414 | 218000 |
| Yoga | 2101 | 1250 | 1014471 | 228000 |
| Acupuncture | 22420 | 14081 | 720748 | 190000 |

*Citation figures as on 21 June 2009.

Table 2. Comparative citations* of Ayurveda and TCM in high impact journals

| Journal | Impact factor | Ayurveda | TCM |
|---|---|---|---|
| NEJM | 52.589 | 0 | 23 |
| Nature group | 29 to 26 | 66 | 257 |
| Science | 26.372 | 6 | 45 |
| Lancet | 28.638 | 29 | 629 |
| JAMA | 25.547 | 16 | 466 |
| BMJ | 9.723 | 62 | 80 |
| PNAS | 9.598 | 0 | 15 |
| DDT | 7.7 | 0 | 4 |
| JBC | 5.581 | 0 | 1 |
| e-CAM | 2.535 | 25 | 23 |
| JEP | 2.047 | 58 | 126 |
| IJMR | 1.67 | 7 | 0 |
| AJCM | 1.122 | 2 | 129 |

*Citations limited for presence in 'title, abstract or keywords' as on 21 June 2009.

## Ayurveda Citations

However during the last 15 – 20 years there has been a sharp increase in the number of articles on Ayurveda in international journals (Figure 1). The authors concluded that the scientific community and government should further intensify systematic efforts and encourage collaborative research to bridge this gap and strengthen the presence of Indian Ayurveda in high-impact journals.

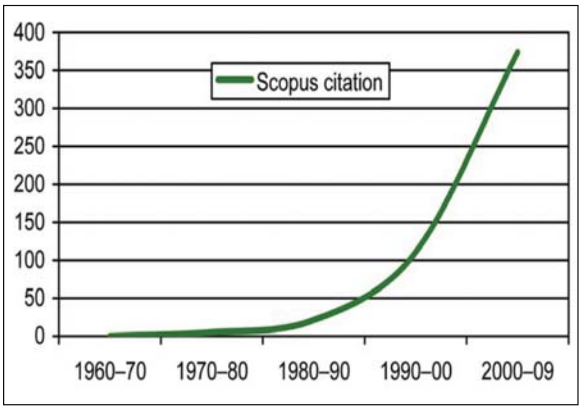



Figure 1. *Scopus* citations as on 21 June 2009 for Ayurveda in 'title, abstract and keywords'.

**Examination of peer reviewed journals:** Various peer reviewed journals of 2009 -10, which focused on Ayurveda were got reviewed by the PI to find the focus of present research in peer reviewed journals. Approximately 250 papers on different topics and observations were scrutinized by Dr. Sathya N Dornala, Ph D, (who worked part time with the PI).

The major journals reviewed were:

1. International Journal of Ayurveda Research (IJAR)
2. Journal of Ayurveda and Integrative Medicine (JAIM)
3. AYU Journal of Research in Ayurveda

On review it was found that the majority of research was focused on the following areas (given in decreasing order of priority):

1. Diabetes
2. Rasayana and Ageing
3. Arthritis (Osteo & Rheumatoid)
4. Preclinical studies
5. Skin diseases
6. Standardization of Bhasmas
7. Quality control of Ayurvedic formulations
8. Scientific relevance of Ayurvedic concepts

## Consultation with Experts on New Ways of Approaching Clinical Research

**Introduction:** The PI held discussions with a wide range of experts engaged in conducting clinical research of ASU treatment. She wrote to numerous experts whose names were given by different sources and the Department of AYUSH. A copy of the letter is at **Annexure IV**. The main extract or the PI's letter is re-produced below:

> "While decades have been spent in trying to standardise ASU medicine in the hope that one day the products will be used by industry and will be mainstreamed into medical practice, the evidence is that this has not happened. Many promising openings have had to be discarded before reaching the phase 3 trial stage. Even where one or two products were identified after completing all the rigours of research, following modern medicine parameters, the products were not utilised by industry.
>
> And yet we claim that ASU has something to offer whether as a stand-alone therapy or as an adjuvant or adjunct. This claim has to be put to the test in a way that the public benefits directly and it is time that we thought of doing things differently. For doing so we need to change track and allow the physician to treat the patient in an individualistic, holistic way and find a way of judging outcomes through a comparison of medical parameters of similarly diagnosed patients having a similar level of impairment or illness who have been treated through the allopathic system. The choice of patients should be through voluntary option given in the OPDs of allopathic hospital departments and the choice should be left to the patient to opt for allopathic treatment or ASU treatment."

**Outcome of advice given by experts:** The PI sought the guidance of a wide cross-section of experts who were engaged in ASU research whether this approach had any validity. Detailed responses were received from several experts but the comments of Dr. Ashok Vaidya, Dr. Urmila Thatte, Dr. Bhushan Patwardhan, and Dr. Ram Manohar bear special mention. The words of the Secretary S&T Dr. T Ramasami at the end of this section summarise what most experts have suggested in one way or the other.

> "A paradigm shift in Ayurvedic research is an urgent need for global health. The evidence of quality, safety and efficacy from therapeutic outcome studies (TOS) will be such a new path. A governance and research management structure needs to be highly empowered so as to derive definite benefits of TOS to the people. The resources-human, financial and infrastructural – will have to be adequately provided on an on-going line. There is a strong chance that TOS will lead to significant health benefits in chronic metabolic and aging disorders. This could have a major impact on global health." *(Dr. Ashok B Vaidya, Research Director, Medical Research Center- Kasturba Health Society; ICMR Advanced Centre for Reverse Pharmacology in Traditional Medicine (ACRIT), Mumbai)*

> "There is an urgent need to promote research in research methodology in ASU area. We need to think of out of the box methods – better inclusion/exclusion criteria, different controls, a look at "therapies" as "black boxes", a true collaboration between the ASU and modern medicine physician in evolving end points and efficacy-safety variables. This collaborative research will bridge the gaps and lead to a wider acceptance of the systems. We need to introduce Ayurveda in modern medicine teaching colleges – first as an elective at least. In much the same way we need to promote research methodology and scientific writing workshops for the teachers in Ayurveda colleges." *(Dr. Urmila Thatte, Professor and Head, Department of Clinical Pharmacology, Seth GS Medical College & KEM Hospital, Mumbai)*

> "Issues related to appropriateness of conventional, biomedical and clinical models for evaluating efficacy of systems of traditional medicine remain critical. A holistic, whole systems approach seems better suited to study therapeutic efficacy and pharmacodynamics of traditional medicine. Instead of randomised controlled trial is normally used as the gold standard, routine biomedical research, strategy of pragmatic or whole system clinical trials may be better suited for Ayurveda." *(Dr. Bhushan Patwardhan, Editor-in-Chief, Journal of*

*Ayurveda and Integrative Medicine; Vice-Chancellor, Symbiosis International University, Pune.)*

**Commonality of the views expressed by experts:** The views of Dr. Ram Manohar of the Ayurvedic trust in Coimbatore are important because he was a part of a study funded by the National Institutes of Health (NIH) Bethesda, USA in which RCT was conducted on Rheumatoid Arthritis. For the first time Ayurvedic physicians were allowed to individualize the treatment and modify it in the course of the trial. Because of this development what he has to say gains importance:

"It is indeed true that research in Ayurveda is not properly directed. There is no clear road map and the priority areas have not been identified.

Current research is centered on activities like standardization of drugs and formulations for obtaining licenses to market these products, or bio-prospecting i.e. screening herbs to identify new chemical molecules. There have also been interesting initiatives to explore the science behind Ayurvedic theory and this has led to emergence of approaches like reverse pharmacology, ayurgenomics and the like. However, this kind of research has not addressed fundamental questions related to the way Ayurveda is actually being practiced and public concerns about safety, efficacy and relevance of Ayurveda in the public health care system.

For example, all the standardization work by research institutes and pharmacies have not satisfactorily answered questions concerned with safety of Ayurvedic medicines. The quality and standards of Ayurvedic medicines is hardly assured and there are growing concerns regarding safety. Bioprospecting, Reverse Pharmacology, Ayurgenomics are all approaches that seek to appropriate Ayurvedic knowledge for the advancement of modern medicine in the ultimate analysis. This kind of research does not focus on the role that Ayurveda can play as an independent system of medicine in conjunction with other approaches to health care in the pluralistic health care set up in India.

The focus has to shift to the actual practice of Ayurveda and how it impacts public health. This is the line of research adopted by countries like US, Europe where Complementary and Alternative Modalities of healing have become popular.

We need to study Ayurveda in real life clinical settings in all the diverse ways that it is practised. We have to come up with the criteria that will enable the public to discern between what is credible and not credible when it comes to available Ayurvedic interventions. We have to come up with data that addresses basic concerns regarding safety and efficacy of Ayurvedic interventions in the form that they are being offered to the public today." *(Dr. Ram Manohar, Director of Research, The Ayurvedic Trust, Coimbatore, Tamil Nadu)*

## Importance and Impact of the Study by Dr. Ram Manohar and his Group – An Example of Good Clinical Research

The National Institutes of Health, USA funded Randomized Clinical Trial comparing whole Ayurveda intervention against Methotrexate was conducted at the Ayurvedic Trust, Coimbatore in collaboration with the University of Washington, Seattle and University of California, Los Angeles. Through this study a new protocol for conducting double blind, placebo controlled Randomized Clinical Trials to evaluate complex and individualized Ayurvedic interventions has been developed.

This study is perhaps the first ever instance of so many things falling into place correctly. The research team was built through collaboration with leading Universities in the United States. One of the most eminent rheumatologists in the field of modern medicine led the study. The study was funded by the National Institutes of Health, the apex body for medical research in the United States. The results of the study got published in the best research journals for rheumatology in the world. The methodology employed in the study won the appreciation of even strong critics of Complementary and Alternative Medicine.

The pilot study validated the methodology and also provided preliminary evidence that individualized Ayurvedic treatment is as effective as Methotrexate without the risk of serious side effects. The study indicates that Ayurveda can offer treatment as a stand alone therapy. Supplementing Allopathic treatment with Ayurvedic medicines may lead to undesirable consequences.

The outcomes of this study was presented at the American College of Rheumatology and published in high impact journals such as Annals of the Rheumatic Diseases and Journal of Clinical Rheumatology.

The study design has also been recommended as the blue print for future studies on traditional, complementary and alternative systems of medicine in the journal Focus on Alternative and Complementary Therapies.[2]

The views expressed by Doctors, Vaidya, Thatte, Patwardhan and Ram Manohar seem to be on all fours with what the Secretary, Department of Science and Technology Dr. T Ramasami wrote in answer to questions posed by the PI.

### 1. Do you think that traditional medicine concepts have relevance today? What has been your experience?

"In my personal view, concepts behind the traditional medicine from ancient civilizations enjoy greater relevance today than that they did in the past 100 years. While modern medicine has delivered healthcare solutions for several diseases, affordability and accessibility of healthcare systems in the modern world have posed challenges.

Affordability and accessibility criteria on the one hand and the integrative biology embedded in the traditional medicine make them even more relevant for the management of chronic and neglected diseases than modern medicine.

While modern medicine is highly valuable in increasing the longevity of human life, ancient systems offer an opportunity to add some quality into a prolonged life.

Modern medicine has been outstanding in areas of diagnosis, interventional medicine as well as surgical correction. However, the underlying principles of modern medicine are based on reductionism and applications of molecular and system biology. It is difficult to factor-in feedback and other natural responses to drugs given the genetic variety of human subjects. Consequently, extensive clinical trials based on animal models and human subjects as well as long gestation time have become essential. These demands do tend to make the discovery of drugs through modern R&D paths investment intensive.

Traditional medicine based on centuries of empirical observations and inductive logic and integrative biology offers better scope for management of chronic and life style diseases than modern medicine. The world is coming to realize the value of our traditional forms of medicine.

### 2. Have the research projects supported through DST given outcomes beneficial to the community in terms of identified outcomes?

"DST has supported research and development projects in both public and private institutions since 2003-04. These projects have broadly supported the standardization of herbal drug formulations based on traditional medicine systems. Management of diabetes, HIV/AIDS and arthritis has formed the major focus of research supported by DST.

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2. The study team consisted of experts from both India and USA -The USA team mainly comprised of Dr. Daniel Furst (Clincal Lead Investigator), Dr. Manorama Venkatraman (Program Director), Cathryn Booth La Force (Principal Investigator, US Side) and Mary McGaan (Data Manager) and The India team mainly comprised of PR Krishna Kumar (Project Director), Dr. P Ram Manohar (Principal Investigator, India Side), Dr. KG Raveendran (Treating physician-Ayurveda), Dr. PG Sekhar (Treating physician-Allopathy), Dr. Reshmi Pushpan (Study Coordinator), Dr. Anita Mahapatra (Pharmacist) and Mr. Jidesh (Data Manager).

Honest answer is that it may be too early to recognize beneficial outcomes from the research projects supported under Drug and Pharmaceutical Research Programme of Department of Science and Technology. Investments into creation of facilities for standardization of formulations from traditional medicine have been made during the last five years. These are likely to provide some useful gains in the standardization of formulations.

### 3. Would you recommend a better way of R&D? What would you recommend for altering the ways of conducting research in the area?

"I would not like to refer to changes but I would like to propose as a better method of performing R&D in the area, would propose an alternative and newer way. In my opinion, the grammars of Alternative and Modern Medicine do not match. Both forms of medicine are valuable in their own ways but the R&D tools of modern medicine may not seem to fit the needs of traditional medicine.

Modern medicine is based on reductionism and understanding of the chemical biology of diseases and statistical assessment of drug responses on live systems. Animal models and clinical trials on human subjects form the basis of drug discovery. It employs the tools and grammar of discovery science and learning from closed systems and laboratory observations.

Traditional medicine employs the tools of integrative biology and empirical observations of healthcare outcomes on human subjects (made over centuries) and uses the concept of personalized medicine. These concepts do not lend themselves to application of animal models. While sophisticated analytical techniques could be gainfully employed, it seems rather difficult to subject the traditional medical formulations to clinical pharmacological studies employed for modern medicine without introducing ambiguities.

Ayurveda and Siddha treat man as a part of an ecosystem while modern medicine tries to rely on drug-host responses at molecular and system biological levels. If man is a part of an ecosystem, inspiration for solutions to human health related problems could in principle be sourced from the plants of the same ecosphere. The question is whether such forms of medicine could be globalised or not.

We need to retrofit the two systems built on widely different grammar. Traditional medicine is based on empirical observations collected over long periods of time. Modern medicine is structured with the rigor of laboratory findings under controlled conditions. Traditional medicine relies on the principle of connecting a grid of causes with a grid of effects while modern science is built on the structure of a single cause coupled with a single effect. Therefore, new paradigms are required to leverage the mutual benefits of modern ad traditional medicines to benefit each other. As a scientist trained with the tools of rigor and an analytical approach but as some bearing faith in the value of traditional medicine, I would like to propose a new approach for revalidation of formulations from traditional medicine using modern tools, without sacrificing the merit of traditional practice. I may like to propose the following.

Let us select and identify 100 patients treated through traditional medicine for say arthritis. The treatment protocol might have employed different formulations based on genotype of patients. This is no issue. Based on the history of treatment, we classify our targeted patients based on their "Prakritis" or genotypes. We then analyse their body fluids using the analytical tools of modern science rather rigorously and search for evidence of biomarkers. For example, in the case of arthritis some proteins and their degradation products could be traced. If there are any statistically significant trends and correlations between health and disease status of the 100 patients treated only by through traditional medicine are compared to those treated using modern medicine, we could derive a more suitable revalidation system for traditional medicine using modern analytical tools. Subjecting traditional medicine to animal models as employed by modern systems may not be appropriate for revalidation. Extrapolation from mouse to man in traditional medicine is not feasible. We need to study effects on men and men only. We could equally well retrofit my concept to diseases other than arthritis as well. DST is mounting a coordinated research project on "Ayurvedic Biology". We need to work at the cross borders of science enrolling human beings as unit of observation rather than molecules, cells and animals".

# Recommendations Relating to a New Approach for Clinical Research

The recommendations are presented under three sub-headings:

## 1. Recommendations relating to improving public confidence through research

**Recommendations to reorient clinical research:** A bold decision needs to be taken in the 12th Plan to support what the Secretary S & T has argued in favour of. In order to make that possible, funds would need to be provided to research organisations that undertake biomedical research, the bottom line being that the therapeutic work would be done exclusively by the ASU physician; but the inclusion and exclusion criteria, the examination of the pathological and other reports would be done by experts who have no stake in the success or failure of the outcomes but are looking for convincing proof that ASU therapeutics and interventions work. Each project should be undertaken collaboratively as given in the example of the US NIH funded study reported by Ayurvedic Trust Coimbatore and substantial funds should be set aside for supporting such research.

**Recommendations on multidisciplinary group to oversee all clinical research:** Against this background what is needed is to have a multidisciplinary group that would be able to agree upon protocols, facilitate the selection of patients that volunteer for ASU treatment as officially offered in response to a Notice in an allopathic clinic dealing with that speciality. The disease areas to be taken up may include dermatology, rheumatoid arthritis, bronchial asthma and diabetes to start with. The monitoring group should have one or two interventional experts in the field of Complementary and Alternative medicine to build credibility. Practitioners who have been engaged in treatment from the Ayurveda, Unani or Siddha Research Councils should be included in the Monitoring Committee to ensure that research is centered on genuine ASU treatment. In addition there should be other members from scientific disciplines to ensure that good science is employed in conducting research. Giving the responsibility like CCRAS & CCRUM will not work although their professional staff can become the conduit to impart treatment to patients which they have been doing for years at the Councils' centres.

**Recommendations on uplifting the councils' vision:** If necessary the Scientific Advisory Committees (SACs) and Technical Committees of the Councils should be restructured to allow for this infusion of a multidisciplinary spirit. However a mere change in the SACs would not suffice. The Councils of the Department of AYUSH do not have the requisite exposure or wherewithal to be able to successfully validate ASU therapies in real life clinical context or to conduct and document clinical research with the rigour acceptable to international peer reviewed journals. The Councils have been directed by several Technical Committees over the years to narrow down research to drug combinations a single formulation and follow a standard allopathic protocol to conduct research. Unless the outlook of the Councils is widened and the research staff is exposed to international standards of clinical research, it would be difficult for them to raise themselves to suddenly conduct high quality research. Funds should be set aside for observational study tours to institutions in India and abroad after drawing up MoUs Selection should be after interview and not on the basis of seniority.

## 2. Recommendations relating to the creation of a multidisciplinary group for providing advice on enhancing collaborative efforts

**Discussion:** It is apparent that organisations like ICMR, CSIR, DBT and Department of Science &Technology (DST) are contributing in several ways to enhance what can be best derived from traditional medicine knowledge. However to have greater coordination and oversight a high-level group should meet at least every six months to review the extent to which the research work is likely to benefit the public. In fact that should be a constant benchmark to judge the usefulness of ASU clinical research.

ICMR has the wherewithal to draw up protocols for therapeutic outcomes studies. It can act as a conduit to counsel patients visiting the speciality clinics in allopathic institutes and to help register them for undergoing ASU treatment as a part of therapeutic outcome research. Otherwise lay patients may not understand all aspects of the research and the stature of ICMR would convince them that the clinical trials have a strong multi-disciplinary foundation and government support.

**CSIR** has been able to pass on the outcome of research based on the properties of plants for the use of industry. But asked whether the off-take is growing or static, no response was given. Admittedly the question was beyond the area of responsibility of an individual scientist: it is necessary therefore that CSIR monitors the extent to which the outcome of the technology/processes transferred to industry is being utilised because that is a clear reflection about the usefulness of the drug. Even if this goes beyond the mandate of CSIR, periodic follow up of the extent of benefit public has received needs quantification. In the area of drugs based on traditional medicine it will give confidence and credibility to the findings if they are based on ASU or tribal or folk knowledge.

**DBT** is already contributing towards the conservation, preservation, in situ and ex situ cultivation of medicinal plants. In the chapter on medicinal plants and on drugs, there was a constant lament from dealers of medicinal plants, manufacturers and practitioners about the irreversible shortage of key medicinal plants. Greater interaction between DBT and the National Medicinal Plants Board on a continuous basis would help focus on critical areas e.g. whether the propagation of Vijaysar for controlling diabetes which was proved by ICMR, can be started as it is reported to be extinct.

**DST** has promoted and supported a large number of projects related to the ASU sector listed at **Annexure-II**. The details should be known to Department of AYUSH which is funding similar projects. While this may be happening already there is a need to share information more collaboratively for mutual benefit.

**Recommendations to enhance collaborative efforts:** A quarterly meeting of the Secretary AYUSH, Secretary Health Research/DG ICMR, Secretary DST, DG CSIR and DBT, with the limited purpose of reviewing outcomes that have benefited the public would provide greater impetus for research, introduce course correction and would produce outcomes which are of direct advantage to the public. Such meetings are already being held to give a direction to new initiatives. However a joint stock-taking for intra-mural and extra-mural research funded form Government funds from the point of view of public benefit would alert those who are responsible for conducting research to remain focused on that goal.

## 3. Clinical research and patient care experience generated by CCRAS and CCRUM

**Public benefit:** The therapeutic outcome claims of the two Councils have been officially reported to Government and to Parliament for decades. If so, a wider public ought to benefit from the work done by the Council. In the last 20 years – in fact much longer not a single product patent has been granted to CCRAS. But enormous clinical work has in fact been done and the areas of strength have been identified. Therefore the public would benefit much more if CCRAS/CCRUM were asked to open special treatment centres where case management using identified drugs could be made available on a wider scale. If public funds were used for past work which had positive outcomes, members of the public need to know where such treatment can be accessed and the management of patients needs to be planned professionally so that they are not turned away because of poor management.

**Curtailment of in-house clinical research:** According to the law, if formulations follow the classical dosage form and ingredients, no further trials are needed. In that case, continuing clinical research in an open ended manner simply by trying new permutations and combinations of the same drugs is wasteful; this is because these pursuits have shown negligible outcomes in terms of acceptance for patent or for adoption by industry. Instead the Councils should be made responsible for acting as a conduit for getting standardised drugs manufactured centrally through a public sector company under the Department of AYUSH or outsourced to good manufacturers in the private sector. The logistics of raw material quality, production of standardised drugs and their timely despatch to treatment centres can be done by the Council staff many of whom are engaged in routine, repetitious clinical research which amounts to little more than offering rudimentary treatment in a peripheral kind of way.

**Patent route needs complete rethinking:** The process of acquiring patents appears to have no significance because no industry has shown interest in using the research findings of CCRAS and CCRUM over decades. Most large manufactures have their own in-house research facilities and have not used CCRAS or CCRUM's research findings.This route of conducting in-house clinical research should therefore be abandoned as such research

has not proved the effectiveness or efficacy of the treatment in a way that medical research requires.

Modify aims and objectives of the Councils: The Department of AYUSH should consider altering the aims and objectives of CCRAS and CCRUM to assign the Councils a specific role in providing diagnosis and treatment for 6 -8 identified diseases and conditions. Stocks of medicines should be available in the selected centres, either manufactured at reputed pharmacies or under license from Indian Medicine Pharmaceutical Corporation Limited (IMPCL). The personnel from the centres can be rotated around to work in the new treatment centres as the Councils' staff although transferable have always resisted a change of locale.

Campaign about treatment centres: The Department of AYUSH should consider launching a campaign about the newly established CCRAS and CCRUM run treatment centers. A centralized web site should inform the public about each centre and the specialised treatment available at the facility. The details of the centres should be listed alongwith a Google map to show the locations. The advantage would be that at least in the areas where ASU drugs formulated by CCRAS/CCRUM have a strong potential for cure/mitigation of disease conditions, information on where to go, for what, would be easily available. Most of the identified drugs formulated by the CCRAS do not contain minerals or metals and the efficacy of the ingredients and their continued use over years has been established. CCRAS should run speciality centres for specific conditions viz., rheumatoid arthritis, bronchial asthma, hemorrhoids and fistula. Siddha Medicine for psoriasis and for manipulation of pressure points through varma therapy (described in the chapter on Practice would also be sought after). By involving the Council's staff there would be credibility as these persons would be Government employees.

CCRUM has been able to treat a large section of the public by providing treatment for Vitiligo, Eczema, Psoriasis, Rheumatoid arthritis, Bronchial asthma and Sinusitis. It is therefore necessary to set up Specialty Centres to treat these conditions using Unani Medicine which has been found to be very effective.

Recommendations related to budget requirements: In the 12th Plan funds would need to be earmarked for giving a direction to these recommendations with the aim of bringing the fruit of three decades of research and clinical experience gathered from using the Council's coded formulations. Funds will need to be assigned for:

- Creation of 6-8 modern centres for treatment of specific conditions with consultation rooms and a waiting area separately for patients who come with appointment. For paid patients there should be a registration charge of Rs 200/ per consultation and specific timings for paid consultation in the evenings. For those who come without appointment they should be treated in the OPD in the forenoon free of cost. A Revolving Fund should be created for each centre to be utilized for improving day-to-day functioning of the centre. The Special Centres should maintain patient records on the computer; the special consultation area should be air-conditioned, should have clean toilets and printed literature answering the questions that patients generally ask about the centre/ doctor/medication. In case of rush there should be a Receptionist who can manage the appointments so that patients know how long they would need to wait. The Specialty Centre's Manager should have an MBA or a degree in hospital management to be able to pay adequate attention to management and delivery of efficient services in clean surroundings. This should not be done in-house as the culture within CCRAS/ CCRUM is tolerant of rather low house-keeping standards which paid patients will not accept. It also militates against professionalism.
- Both CCRAS and CCRUM have abundant space to start such speciality clinics in their larger Institutes elsewhere in the country. The National Institutes of Ayurveda, Siddha and Unani Medicine, besides several other institutions located at Hyderabad, Delhi, Chennai and several other cities also have good surroundings and enough space with a little re-adjustment.
- Production of the formulations for free supply and sale to paid patients coming to the treatment centres by outsourcing to good manufacturers (with oversight of raw material used and processes followed). The quality of the packaging and labeling has to inspire confidence. Funds would be needed to step up production initially until the centres break

even and can pay for the drugs from fees collected from paid patients and the sale of medicine.

- **A media plan to build awareness** about the availability of facilities at the Specialty centres through television, radio and print media should be sustained for at least one year and stepped up for three months in each subsequent year for which a budget provision should be made.
- **A budget for payment to part-time consultants** engaged from the private sector for supporting the running of the Centers should be made on condition they use the Council's formulations. (The logic is to use the Councils' formulations which are the product of work undertaken at public cost over decades. This will not affect private manufacturers or practitioners but will offer the public confidence about the credentials of the treating physician and the quality of the drugs.)

The foregoing initiatives can help open the benefits of decades of in house work to offer treatment to a much larger section of patients who suffer from these chronic medical conditions and are in search of reliable Ayurveda, Unani and Siddha treatment. By having speciality paid clinics, everyone in society would get a chance of availing of ASU specialised treatment which has a high success rate in specific areas.

## Funding for clinical research

For funding the therapeutic outcome clinical research studies and encourage allopathic research institutes like AIIMS, PGI Chandigarh, GB Pant Hospital, Delhi, the Department of AYUSH should make adequate provision to make such research meaningful. The treatment can go on in any ASU institution but the reporting and study of diagnostic and pathological reports should be left to an independent multidisciplinary group to examine and record their findings. A generous budget should be set aside for promoting such therapeutic outcome clinical research involving multi-disciplinary groups.

# Annexure-I

## Details of Cases where TKDL Evidence led to Patent Claims being rejected or withdrawn

1. List of cases set aside

   (i) EPO decided to grant patent to M/s. Data Medica, Padova SPA, Italy on 19.2.2009 for use of **Pista** as an **anti-cancer** drug. TKDL Unit, CSIR, India submitted evidences on 09.07.2009, then EPO set aside its earlier intention to grant patent on 14.07.2009.

   (ii) EPO decided to grant patent to M/s. Perdix Eurogroup SL, Spain on 02.04.2009 for use of watery extract of **kharbooza /melon** as an **anti-vitilgo** cream. TKDL submitted evidences on 08.07.2009, then EPO set aside its earlier intention to grant patent on 28.7.2009.

2. Details of cases where applicant modified the claims are given below:

   (i) EPO decided to grant patent to M/s. Livzon Pharmaceutical Group Inc., China on 25.02.2010 for use of **Kalamegha** and **Mint** for the treatment of **Avian influenza**. TKDL submitted evidences on 20.05.2010, then EPO set aside its earlier intention to grant patent on 10.6.2010. Subsequently, the applicant modified its claims on 05.07.2010.

3. Details of applications filed at EPO where applicants themselves decided to withdraw their claims/patent application after they were confronted with TKDL evidence are given below:

   (i) M/s Purimed Co. Ltd., Korea filed a patent application on 09-06-2005 for treatment of **heart diseases** using **Indian lotus**. TKDL submitted evidence on 17.07.2009. On 04-08-2009, applicant withdrew its claims/patent application.

   (ii) M/s Jumpsun Bio-Medicine Co., Ltd, China filed a patent application on 06-03-2006 for treatment of **obesity** and/or **diabetes** using **Bengal gram/Chana**. TKDL submitted evidence on 11-06-2009. On 20-11-2009, applicant withdrew its claims/patent application.

   (iii) M/s Amcod Limited, Kenya filed a patent application on13-09-2005 for treatment of **diabetes** using **Neem, Gheekawaar** and **Daal Chini**. TKDL submitted evidence on 01-07-2009. On 24-11-2009, applicant withdrew its claims/patent application.

   (iv) M/s Clara's ApS, Denmark filed a patent application on 19-09-2007 using **Haldi/ turmeric, Zeera, Adrak/Ginger** and **Pyaaz/ onion** as a **slimming agent**. TKDL submitted evidence on 25-08-2009. On 30-10-2009, applicant withdrew its claims/patent application.

   (v) M/s Cognis IP Management, Germany, filed a patent application on 09-03-2007 for the treatment of **obesity** using **Gheekawaar**. TKDL submitted evidence on 20-07-2009. On 27-11-2009, applicant withdrew its claims/patent application.

   (vi) M/s Evonik Goldschmidt, Germany, filed a patent application on 30-11-2007 using **Arjuna** as an **Anti-ageing/anti-wrinkle agent**. TKDL submitted evidence on 07-09-2009. On 27-01-2010, applicant withdrew its claims/patent application.

   (vii) M/s Unilever Nv, Netherlands, filed a patent application on 18-06-2004 using **Grape juice** and/or **Apple juice** as a **cardio tonic**. TKDL submitted evidence on 17-07-2009. On 04-08-2009, applicant withdrew its claims/patent application.

   (viii) M/s Kapur MBBS, B., Dr., Great Britain filed a patent application on 13.06.2007 using **Opium, Spinach** and **Saunf/ Fenugreek** as **immuno- modulator agents.** TKDL submitted evidence on 16.02.2010. On 18-02-2010, applicant withdrew its claims/patent application.

   (ix) M/s Natreon Inc, USA, filed a patent application on 27-07-2006 using **Ashwagandha** for the treatment of stress, sleeplessness and anxiety. TKDL submitted evidence on 06-07-2009. On 25-03-2010, applicant withdrew its claims/patent application.

(x) M/s Jan Marini Skin Research Inc, USA, filed a patent application on 22-02-2007 using **Brahmi, Tea leaves, Ashwagandha, Turmeric** as **anti ageing** and **anti-inflammatory agents**. TKDL submitted evidence on 02-07-2009. On 08-04-2010, applicant withdrew its claims/patent application.

(xi) M/s Avesthagen Limited, India, filed a patent application on 15-08-2003 using **arjuna** as **cardio tonic** and for the treatment of **obesity** and **diabetes**. TKDL submitted evidence on 08-07-2009. On 06-04-2010, applicant withdrew its claims/patent application.

(xii) M/s Naveh Pharma Ltd, Israel, filed a patent application on 29-03-2007 using **Rose** and **Sweet violet** for the treatment of **diseases of throat**, e.g. **pharyngitis**, and **sore throat**. TKDL submitted evidence on 24.07.2009. On 15-04-2010, applicant withdrew its claims/patent application.

(xiii) M/s GW Pharma Limited, Great Britain, filed a patent application on 11-10-2006 using **Bhaang** for the treatment of **cough and bronchitis**. TKDL submitted evidence on 21.05.2010. On 24-06-2010, applicant withdrew its claims/patent application.

(xiv) M/s Ocumedic APS Denmark, filed a patent application on 22-11-2007 using **Naarangi** for the treatment of **disease of eye**. TKDL submitted evidence on 14.06.2010. On 06-07-2010, applicant withdrew its claims/patent application.

(xv) M/s Jaffe, Russell M. USA, filed a patent application on 07-11-2006 using **Babool** for the treatment of **constipation, indigestion and diabetes**. TKDL submitted evidence on 30.06.2010. On 06-07-2010, applicant withdrew its claims/ patent application.

(xvi) M/s Indena S.p.A. Italy, filed a patent application on 12-06-2008 using **Abuqanus** for the treatment of **Asthma and Breathlessness**. TKDL submitted evidence on 23.07.2010. On 26-07-2010, applicant withdrew its claims/patent application.

(xvii) M/s Haelan Schweiz, Switzerland, filed a patent application on 13-06-2008 using **Alsi and Pomegranate** for the treatment of **diseases of heart, skin and diabetes**. TKDL submitted evidence on 12.07.2010. On 26-07-2010, applicant withdrew its claims/patent application.

(xviii) M/s Bios Line S.p.a. Italy, filed a patent application on 10-12-2008 using **Mint, turmeric and Olive** for the treatment of **dysentery**. TKDL submitted evidence on 14.06.2010. On 29-07-2010, applicant withdrew its claims/patent application.

(xix) M/s Ache Laboratories, Brazil, filed a patent application on 14-12-2007 using **Grape** for the treatment of **Diabetes, obesity and hypertension**. TKDL submitted evidence on 01.07.2010. On 01-09-2010, applicant withdrew its claims/ patent application.

(xx) M/s Mercian corporation, Japan, filed a patent application on 17-10-2006 using **Grape** for the treatment of **skin marks and acne**. TKDL submitted evidence on 07.06.2010. On 04-08-2010, applicant withdrew its claims/patent application.

(xxi) M/s Al-Jassim, Rawaa *et al*, United States, Great Britain and Germany, filed a patent application on 02-03-2000 using **Black seeds** for the treatment of **conjunctivitis and allergic disorders**. TKDL submitted evidence on 18.06.2009. On 18-08-2010, applicant withdrew its claims/patent application.

(xxii) M/s Bionature E.A. Limited, Nicosia/ Cyprus, filed a patent application on 16.02.2007 using **Pistacia lentiscus** for the treatment of **inflammation**. TKDL submitted evidence on 23.06.2009. On 22-09-2010, applicant withdrew its claims/ patent application.

(xxiii) M/s Phytrix JV, LLC, USA, filed a patent application on 07.05.2008 using **Phyllanthus** for the treatment of **HIV associated diseases**. TKDL submitted evidence on 03.08.2010. On 28-09-2010, applicant withdrew its claims/patent application.

## Annexure-II
### Traditional Medicine Projects funded by DST

| S. No. | Project Title | Institute/Industry Name – Beneficiary (Financial year) |
|---|---|---|
| i) | Collaborative Projects | |
| 1. | Scientific evaluation of safety and efficacy profile of herbal Siddha formulation (Kodiveli) in the management of Rheumatoid arthritis. | SASTRA University, Thanjavur (2003-04). |
| 2. | Development of a novel herbal ectoparasiticidal product. | Central Institute for Research on Goats, Mathura, U.P. (2003-04). |
| 3. | Standardization and modernization of Ayurvedic herbal formulations using modern techniques. | Indian Institute of Integrative Medicine, Jammu. (2003-04). |
| 4. | Efficacy and safety evaluation of Siddha medicine HIVS-2003 for HIV/AIDS. | Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru (2003-04). |
| 5. | Development of herbomineral and plant-based disease oriented immunomodulator formulation. | Indian Institute of Integrative Medicine, Jammu (2003-04). |
| 6. | Scientific evaluation of safety and efficacy profile of Siddha formulation (KARBOGI) in the management of Leucoderma. | SASTRA University, Thanjavur (2003-04). |
| 7. | Cardoguard tablet delineation of molecular mechanism of action and its efficacy in the regression of ventricular hypertrophy. | Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum (2003-04). |
| 8. | Development and standardization of therapeutic herbal formulation(s) for the management of alopecia and skin disorders. | Ramnarain Ruia College, Mumbai (2003-04). |
| 9. | Quality assurance and validation of some Ayurvedic formulation for life-style related and gynaecological disorder. | Indian Institute of Chemical Technology, Hyderabad (2004-05). |
| 10. | Development of botanical immunomodulators as adjuvants for improving vaccine efficiency. | University of Pune, Pune (2004-05). |
| 11. | Development of drugs for the medical therapy of glaucoma using natural products. | Delhi Institute of Pharmaceuticals Sciences and Research (DIPSAR), New Delhi (2004-05). |
| 12. | Scientific evaluation of safety and efficacy profile of Siddha formulation advocated in the prevention and management of coronary heart disease. | SASTRA University, Thanjavur (2004-05). |
| 13. | Scientific evaluation of safety and efficacy profile of an Ayurvedic Herbal Formulation (RO5) in the management of Diabetes mellitus. | Sri Ramchandra University, Chennai (2004-05). |
| 14. | Chemical standardization and biological evaluation with a view to increase efficacy of herbal medicines. | Indian Institute of Chemical Biology (IICB), Kolkata (2004-05). |
| 15. | Development of new anti-amoebic agents. | Jamia Millia University, New Delhi. (2004-05). |

| S. No. | Project Title | Institute/Industry Name – Beneficiary (Financial year) |
|---|---|---|
| 16. | Scientific evaluation of safety and efficacy profile of novel molecules from the marine herbals for drug development in the management of Malaria. | Manonmanium Sundernar University, Thirunelvelli (2005-06). |
| 17. | Scientific evaluation of safety and efficacy profile of an Ayurvedic Herbal Formulation (AR7) in the Management of Rheumatoid arthritis. | Sri Ramachandra University, Chennai (2005-06). |
| 18. | Studies on the Bioavailability, toxicity, safety and characterization of Bhasmas produced by traditional and modern manufacturing processes. | Indian Institute of Chemical Technology, Hyderabad (2005-06). |
| 19. | Isolation, molecular characterization and biological evaluation of anti-diabetic principle(s) from a few Indian medicinal plants. | Visva Bharati, Santiniketan / IICB, Kolkata (2006-07). |
| 20. | Development of drugs for the medical therapy of diabetic retinopathy using natural products. | DIPSAR, New Delhi (2006-07). |
| 21. | *In vivo* standardization of a Siddha herbal formula for obesity. | SASTRA University, Thanjavur (2007 – 08). |
| 22. | Development of Mechanism based Antidiabetic Formulation, Standardization from Indian Traditional Herbs viz., Bioavailability, Stability studies. | Karpagam Arts and Science College, Coimbatore (2008 - 09). |
| 23. | Standardization, validation and development of herbal formulation for the treatment of neuropathic pain. | PSG College of Pharmacy, Coimbatore (2008 - 09). |
| 24. | Development, standardization and safety of a poly-herbal formulation in the management of obesity associated hyperlipidemia. | Sri Ramachandra University, Chennai (2008 - 09). |
| 25. | Antiaging and anti - wrinkle formulation with matrix metalloproteinase inhibitory activity from natural resources. | Jadavpur University, Kolkata (2009- 10). |
| 26. | Design, development and pharmacological evaluation of novel topical aerosol spray of anti-artiritic herbs used in traditional practices. | KMCH College of Pharmacy, Coimbatore (2009-10). |
| 27. | Isolation and characterization of safer and potent antiviral components from few potential medicinal plants to effectively treat and control infections of Human Herpes Virus-1 (Herpes Simplex Virus-1), Human Herpes Virus-2 (Herpes Simplex Virus-2) and Human Herpes Virus-3 (Varicella Zoster Virus) *in vitro* & *in vivo* studies. | Presidency College, Chennai/ IIIM, Jammu/ TANUVAS, Chennai (2009 –10). |
| ii) | Facility Projects | |
| 28. | National facility for analysis of herbo-metallic products. | Indian Institute of Chemical Technology, Hyderabad (2005-06). |
| 29. | Establishment of facility for identification, chemical characterization, standardization and quality control of medicinal plants found in tribal area in Central India. | Banaras Hindu University, Varanasi (2007-08). |

| S. No. | Project Title | Institute/Industry Name – Beneficiary (Financial year) |
|---|---|---|
| 30. | GMP Pilot Plant for extraction, formulation and packaging of traditional (ISM) Herbal Medicinal Formulations. | Indian Institute of Integrative Medicine, Jammu (2007-08). |
| 31. | National facility for the development of Herbo-metallic preparations of Ayurveda, Siddha and Unani. | SASTRA University, Thanjavur (2008-09). |
| 32. | National R&D facility for Rasayana Products in Indian systems of Medicine. | Foundation for Revitalization of Local Health Traditions, Bengaluru (2009-10). |
| (iii) | Loan Projects | |
| 33. | Development of a novel formulation for the prevention and management of coronary heart disease by using tribal plants and development of a novel formulation for the prevention and management of neuro-degenerative disorders by utilizing herbal plants found in tribal locality of Vindhya and Satpura Hills. | Tulsi Ayurvedic Products & Research Pvt. Ltd., Bhadohi (2005-06). |
| 34. | Development of a standardized herbal product for management of Non Insulin dependent Diabetes Mellitus (NIDDM). | Natural Remedies Pvt. Ltd., Bengaluru (2005-06). |
| 35. | Development of quality herbal formulation (R06A) and its scientific validation for the management of Renal Calculi. | Rumi Herbals Pvt. Ltd., Chennai (2005-06). |
| 36. | Development of an indigenous immunirestorative herbal formulation - Jyoti Amritum for HIV/AIDS. | M/s Thirteen Herbs & Cure Pvt. Ltd., New Delhi (2007-08). |

# Annexure-III

## Questionnaire relating to Clinical Research issued to CCRAS and CCRUM

Q.1. In the last 10 years which top (best 5-6) research projects undertaken by the Council have led to the identification of products which were in the view of the Council able to provide mitigation or cure from a specified medical condition?

(a) Name each such product and indicate the date on which a patent was filed or has still to be filed. If the patent has not been filed, please indicate the present position.

(b) Indicate the place/places where the research was undertaken separately for each such product, the number of patients who were treated and the reason why the product is considered as being more "successful" in terms of the outcome, than other medically oriented research studies undertaken over the last 10 years.

(c) Indicate briefly a description of the medical condition/disease for which the product was found useful and give an idea of the extent of such usefulness and the basis on which the conclusion about such usefulness has been decided.

(d) Indicate the reason why the patent applied for may not have been granted along with the date of filing of the patent and the efforts made to undo any shortcomings pointed out by the patent granting authority. Also indicate reasons for not filing for patent in case the product falls among the most successful outcomes of research conducted by the Council.

(e) (i) How many patients have been treated, centre wise using this product/treatment regimen.

(ii) What steps have been taken to make practitioners aware about the usefulness of the product? Are the products being made available to practitioners other than the centres run by the Council?

(iii) What has been the response of the practitioners and on what basis is the response being given? (Were the practitioners asked orally or is it by virtue of repeated orders being placed or any other reason?)

(f) The ultimate aim of the biomedical research undertaken by the Council is to give leads to industry so that they can use the research work done to manufacture and market the products for the benefit of the public on a wider scale. If the leads identified by the Council have not been made available to industry then how has the principle of cost effectiveness been satisfied if the product is only being used at limited centres run by the Council?

Q-2. What better system would the Council like to suggest for improving the offtake of the most promising products which have been identified as a result of research?

Q-3. In respect of each product please indicate whether there are any issues of availability of raw drugs, standardization which would make bulk manufacture difficult?

# Annexure-IV

## Letter sent by the PI to Experts relating to a new Approach to Clinical Research

Date: December 6, 2010.

Subject: New Approach to Clinical Research

Dear All,

I have been in touch with some of you during the last few months. With some others I'm touching base after several years. I'm therefore sending a generic letter about which I have held a discussion with some of you.

Around six months ago, the Joint Secretary in the Department of AYUSH Shri DD Sharma had written to you about a project that I have undertaken relating to the benefits that traditional medicine (Ayurveda, Unani and Siddha Systems) have given the people and the gaps that need to be filled when the 12th plan is formulated.

In the last few months I have been trying to talk to as many persons as possible to understand developments that have taken place in the areas of research, education, practice, drug standardisation, quality control and availability of products – all from the point of view of specific benefits that have accrued to the public through projects supported by government or as a part of individual effort.

In the area of research I have been in touch with ICMR, Department of S & T, CSIR, DBT, CCRAS and CCRUM. Undoubtedly the efforts made by different organisations have been commendable but seen from the point of view of products and services that have been made available to a wider public, the outcomes are small. A lot of effort has gone into trying to standardise the ASU drug, and to use it either for clinical research or for identifying the active principles. Considerable work has also been done on medicinal plants but again the direct benefits that the public have received have been largely undefinable.

At this point due to increase in life expectancy, the large-scale growth of non-communicable diseases exacerbated by lifestyle changes, pollution of the environment and the stress of modern living, people have to live with disease, pain and impairment for long years. Debilitating conditions caused by arthritis, diabetes, hypertension, the aftermath of accidents and stroke and a host of gynaecological conditions have left a kind of public searching for alternatives and adjuvants from alternative medicine. More and more people are willing to opt for ASU treatment but since they belong to an educated class they insist on understanding the basics of what goes into the making of the medicine; they would like to be assured that there are no impermissible substances and that harmful and toxic substances are not present. They would also like to be assured about the competencies and skills of the practitioner. Except for a few clinicians and products manufactured by highly reputable pharmacies, the general picture is not inspiring.

The irony is that on the one hand the states licence hundreds of ASU products as medicine and the preparation of the pharmacopoeias to ensure standardisation is given high priority. The products are actually selling in the market as classical drugs or as patent proprietary products and a certain section of the public is accessing them through practitioners or on their own. But in the absence of any quality assurance, a wider public and particularly those who are educated and astute remain curious but suspicious about the products. Even so some are not averse to trying them for chronic conditions provided that there is satisfaction about the credentials of the practitioner and concerns about the quality of medicine — particularly toxicity issues are vouchsafed for.

One of the main problems is that the ingredients are either written in Sanskrit or in botanical terms. While it is true that patients ask no questions about the composition of allopathic drugs, that paradigm does not apply to ASU products where the drugs have not gone through the conventional route of research. The consumer demands to know what the constituents are and he is not impressed with either rhetoric or emotion.

While decades have been spent in trying to standardise ASU medicine in the hope that one day the products will be used by industry and will be mainstreamed into medical practice, the evidence is that this

has not happened. In trying to register efficacy and safety through randomised controlled trials (RCTs), the ASU approaches to determining the prakriti or temperament of the patient have been abandoned. Many promising openings have had to be discarded before reaching the phase 3 trial stage. Even where one or two products were identified after completing all the rigours of research following modern medicine parameters the products were not touched by industry. If we continue to do more of this kind of research, it is not going to benefit society. Lamenting the non-availability of quality raw material will also not satisfy the public. The cultivation of medicinal plants and the certification of plants obtained from the forest is a laudable goal but we all know how difficult it is to put it into action notwithstanding the efforts made by NMPB.

And yet we claim that ASU has something to offer whether as a stand-alone therapy or as an adjuvant or adjunct. This claim has to be put to the test in a way that the public benefits directly and it is time that we thought of doing things differently. For doing so we need to change track and allow the physician to treat the patient in an individualistic, holistic way and find a way of judging outcomes through a comparison of medical parameters of similarly diagnosed patients having a similar level of impairment or illness who have been treated through the allopathic system. The choice of patients should be through voluntary option given in the OPDs of allopathic hospital departments and the choice should be left to the patient whether to opt for allopathic treatment or ASU treatment. No referrals need be sought. Detailed counselling should be undertaken to convince the patients that he would be partaking in a research study using ASU medication and the credentials of the practitioner, the oversight mechanisms, concerns about the quality of the medicine and the ingredients used should all be answered during the counselling session. The specifics of treatment would need to be answered by the treating physician once the research commences.

The protocol should require rigorous independent monitoring of parameters by a multi-disciplinary group, again overseen by a higher body to see that there has been no bias.One hundred Rheumatoid Arthritis (RA) or Osteo Arthritis (OA) patients from allopathic clinics and 100 patients that opt for ASU treatment can be treated – the latter individualistically by the ASU practitioner. The oversight body having multidisciplinary experts would examine the developments relating to agreed parameters to observe the degree of improvement or absence of improvement. The protocol for ASU treatment should permit the physician to modify and alter the drugs depending on factors like age, sex and the presence of other conditions.

Standardisation of the ASU drugs already in the market should not be insisted upon but the toxicology of each of the contents/applications should be got done to exclude non-permissible substances. In the first instance non-bhasma products may be used but when the law permits the use of medicines containing metals and minerals, the patient should be counselled about the ingredients and such formulations may be administered only if the patient opts for the same. No ethical issue would come into play as the drugs would be as referred to in the classical texts and following the pharmacological requirements and are already licenced and available in the market. They would be administered by the Ayurvedic physician and a record of the treatment would be maintained to be overseen by the two multidisciplinary monitoring committees referred to earlier.

I would be grateful for your guidance as to whether this approach has any validity and whether you would be able to suggest the skeleton of a protocol which involves all the disciplines that would be needed to examine the parameters of the patient and to comment upon the outcomes.

The idea is in its nascency. It has not been fleshed out and nor has it been discussed with experts other than all of you. I'm hoping that as an old friend and a person interested in the development of ASU medicine you would guide me with frankness and also correct me if I have committed a gaffe. I would be happy to include what you have to say in the Report that I'm writing. If you disagree with the approach or would like to make a different kind of suggestion I would be only too happy to refer to your point of view.

Regards,

Shailaja Chandra

# 3

# Education

## Education


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# 3

# Status of Ayurveda, Siddha and Unani Education

## I. Evolution of Ayurveda, Siddha and Unani Education

### Introduction

In the nineteenth century Ayurvedic medicine was imparted in the traditional way by traditional gurus who asked for no payment.

In Bengal the "Tol" system (an elementary school called a Muth or Pathashala) was used to educate the aspiring physician called Kaviraja which means "Prince of Verse". To start with knowledge of Sanskrit was imparted but since it was not possible for a teacher to cover the entire repertoire of classical texts, students were given basic knowledge by their "Guru" (teacher) and left to read the remaining topics on their own.

Education in the "Tol" was not just theoretical. Students were like apprentices to the "Kaviraja" and accompanied him when he paid visits to the patient's home. In this way they imbibed the art of diagnosis as well as practical knowledge. Side by side they observed the processing of raw material and its formulation as medicine.

### Colonial Intervention

The British intervention in the medical education system was marked by "political compulsions". Anil Kumar in his book "Medicine and the Raj" has traced the process through which western influence made inroads into traditional Indian medical institutions especially in the field of education. This can be understood in the following words of the author:

"In Britain, the evolution of medical sciences and its dissemination through educational seminaries-research institutions and official as well as private scientific bodies was organic in nature, as its roots were firmly entrenched in the society with a long historical continuity.

In India, on the other hand, it was introduced from the top by the colonial government, over and above the traditional medical systems. Thus, in India the relationship between science, society and state was lacking which evolved by itself in Britain."[1]

The teaching of Ayurveda underwent a change with the establishment of the Calcutta Medical College where modern medicine began to be taught even as traditional Ayurvedic education continued to be imparted by the "Kavirajas". The latter appeared rudimentary compared to the well-equipped medical colleges that offered a wide range of teaching facilities.

Naturally, those who wanted to become physicians no longer found learning under the tutelage of 'kavirajas' an attractive option and became increasingly drawn towards allopathic medicine and institutional teaching.

At first, orthodox 'kavirajas' did not allow their sons to study allopathic medicine, but according to Charles Leslie, "after taking into account the financial advantages, a great number of them also sent their sons to the modern medical colleges."[2] He goes on to say that the students obtained certificates to practice medicine and surgery, and were enrolled as "first class Native-Doctors; the second class Native Doctors were those who had been trained in the short lived Native Medical Institute (established in1822) which was later abolished in 1835. The "Native Doctors' were those whose training had been limited to mere apprenticeship."

1. Kumar, Anil. *Medicine and the Raj: British Medical Policy in India – 1835-1911.* New Delhi: Sage Publication, 1998.
2. Leslie, Charles. *Asian Medical Systems: A Comparative Study.* Delhi: Motilal Banarsidas, 1998.

After 1835, British policies marginalized Indian medicine giving it no encouragement once western medicine was introduced. The Government resolution of 1821 clearly stated that the purpose of British rulers was "to seek every practicable means of effecting the gradual diffusion of European knowledge." Charles Leslie has put this phenomenon in the following words:

> "The political decision to downplay Indian medicine was worked out in different phases. In the early phase both European and Indian medical texts were allowed to be taught side by side in the Sanskrit College. Later on, when the stage was set for a showdown of European supremacy, the Ayurvedic classes were abolished from the Sanskrit College."[3]

During the Governor Generalship of Lord William Bentinck an ideological debate ensued between the General Committee of Public instruction and the "Delhi Committee", on the feasibility of creating a proper intellectual environment for the introduction of western science and literature in India.

Charles Trevelyan of the Delhi Committee which represented the Anglicist point of view criticized the Madarsa style experiment. The Committee felt that this would hamper the eventual transition to the European language.

The Delhi Committee wanted to bypass the minority Muslim intellectual class and its knowledge base and instead target the uneducated among the Muslims to create a new class of those "educated only in European sciences through the English language." This class it was hoped would then carry forward European knowledge in the vernacular to the masses.

The Delhi Committee did not have full support of H.H. Wilson, Secretary of the General Committee of public instruction. But the Governor-General Lord William Bentinck supported them. In the 1820s a middle path was favored; Madarsa education continued but the ground was prepared for English instruction as the vehicle to impart western medical knowledge.

The practicing hakims and vaidyas were trained in aspects of modern medicine in the vernacular and were periodically engaged to implement health programmes in rural areas.

## Response of the ISM Educationists

The protagonists of Indian medicine were resentful but this was expressed mostly through ideological discourses and at meetings, gatherings and conclaves. Ayurveda and Unani practitioners and their leaders and supporters were equally eloquent seeking ways and means to revitalize the systems.

## Giving Scientific Status to Ayurveda

Initial efforts to rejuvenate and popularize Indian medicine came through the reorganization of the production process (pharmaceutealization) and imparting the know-how contained in the classics through a new framework. PS Varier and the Arya Vaidya Shala (AVS, 1902) were among the early pioneers of such efforts.

The Ashtanga Ayurveda College and Hospital was established by Kaviraja Jaminibhushan Ray in 1916. Since Ray was a scholar in both Ayurveda and allopathic medicine, he tried to revive the other branches of Ayurvedic learning by supplementing it with the instruction of western anatomy, physiology and surgery along with physics chemistry and botany.

The Vishwanta Ayurveda Mahavidylaya was founded in 1932 by Kaviraja Gananath Sen with the idea of giving Ayurveda a scientific status by educating physicians trained in all branches of medicine. In this institution too, Ayurveda was taught side by side with allopathy.

Mahatma Gandhi's approach can be understood from a statement attributed to Dr. Chittranjan Das who wrote about the Mahatma's viewpoint on Ayurveda:-

> "Mahatmaji desires that the little that still remains as the glory of Ayurveda should not be completely lost by admixture with allopathic or any other system."[4]

3. Leslie, Charles. *Asian Medical Systems: A Comparative Study.* Delhi: Motilal Banarsidas, 1998.
4. Chittaranjan Das (1870-1925), popularly called Deshbandhu, "Friend of the country" was an eminent Bengali lawyer and a major figure in the Indian independence movement. His eldest grandson was Siddhartha Shankar Ray who went on to become the Chief Minister of West Bengal from 1972 to 1977.

## Building Credibility for Unani

It became apparent that the education, training and the apprenticeship undergone by Unani practitioners were also not recognized by the colonial state as being at par with a 'diploma' from a "recognized school". The controversy over the registration of medical practitioners that began in the 1880s was hotly debated by Unani practitioners as it posed a serious threat to their profession, their status in society and their future.

According to historian Neshat Quaiser, "It (was) the 'reformists' who ultimately prevailed and they were in direct dialogue and confrontation with modern medicine and the colonial state."[5]

The establishment of Madarsa-e-Tibbia (Medical School) in 1889 at Delhi was a landmark development. In his opening speech Sir Syed Ahmad Khan observed that, "English Medicine was very useful and Madarsa-e-Tibbia would develop *doctory* along with Unani tibb and work to remove the differences between the two."[6]

In 1906, the All India Ayurvedic and Unani Tibbi Conference was established. It marked the commencement of joint action to bring the two systems of medicine together viz. Ayurveda and Unani to fight the impending "supression" by modern medicine.

The conference in its first annual meet held in 1910 resolved to work for the establishment of proper teaching institutions for these two systems. It also hoped to mobilise public opinion so that the benefits of the indigenous system of medicine could continue to be availed of.

The inclusion of anatomy and surgery were debated over acrimoniously. In the eyes of "traditionalists" these two subjects were considered to be symbols of colonial domination. For them the Unani method was so complete that surgery was totally unnecessary. Despite this, interestingly, the All India Ayurvedic and Unani Tibbi Conference had itself passed a resolution advocating the teaching of modern anatomy and surgery in Ayurvedic and Unani educational institutions. This shows the ambivalence in approach, a phenomenon that has continued to the present day.

Leading the Unani revival was Hakim Ajmal Khan (1868-1927). He was a Muslim nationalist, a poet, a freedom fighter and a renowned medical practitioner. He took keen interest in the expansion and development of the indigenous system of medicine called Tibb-i-Yunania or Unani. In 1908, he established the Anjuman-e-Tibbia which was later converted into a board of trustees to run the affairs of the Ayurvedic & Unani Tibbi College, registered in 1911. In 1908, he laid the foundation stone of the Zenana Tibbi School to provide medical relief to women. This school was inaugurated by the wife of the Lieutenant Governor of Punjab.

Ajmal Khan also suggested that a parallel National educational institution be established, to enable the students to continue their education in the medical field. It was this idea which gave birth to the Jamia Millia Islamia in 1920.

Hakim Ajmal Khan vigorously advocated the causes of Unani & Ayurvedic systems of medicine. He stressed that two Indian systems which had served the people well should continue and make progress without hindrance.

## Strengthening Siddha Education

Many efforts to strengthen the theoretical and educational basis could also be seen in the case of the Siddha system. The first school of Indian Medicine under the Siddha system was started in Madras during the year 1924. Those who underwent the course were awarded Licentiate in Indian Medicine (LIM). Those who possessed proficiency and undertook the submission of a thesis were awarded the certificate of Highest Proficiency in Indian Medicine (HPIM). Thereafter, an Integrated Medicine (4½ years) course was offered and was later changed into the Graduate Course of Integrated Medicine (GCIM).

Several Boards/Colleges/Organizations existed before and after independence all over the country and regulated all matters concerning education of Indian System of Medicine, the award of Degrees and Diplomas. Their existence shows that there was an effort to regulate and systematize the education of Ayurveda, Unani and Siddha medicine.

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5. Quaiser, Neshat. "Politics, Culture and Colonialism: Unani's Debate with *Doctory.*" In *Health, Medicine and Empire: Perspectives on Colonial India,* edited by B. Pati and Mark Harrison. Hyderabad: Orient Longman, 2001.
6. Quaiser, Neshat. "Science, Institution and Colonialism: Tibbiya College of Delhi – 1889-1947." In *Science and Modern India: An Institutional History,* c.1784-1947, edited by Uma Das Gupta. Delhi: Pearson Longman, 2010.

There were more than 175 such institutions/Boards spread across various states of India engaged in the regulation of education and practice of Indian Medicine. A list of such institutions that shows courses of 1-5 years duration is available at **http://indianmedicine.nic.in/writereaddata/mainlinkFile/File221.pdf** (accessed on 15 July 2011).

From the website of CCIM it would appear that the graduates of courses that were run under scores of state Boards gained entry to the Central Medical Register maintained by CCIM (**http://www.ccimindia.org/central_register_ayurveda.php?st=1**). They also acquired the right to vote by becoming a member of the general body of CCIM. This situation is not on all fours with the situation prevailing in the Medical Council of India's Central Register where every practitioner holds the basic qualification of MBBS (the erstwhile licentiates having been phased out).

As a result of this recognition, the products of Board examinations that were the outcome of a plethora of courses of varying duration and content enjoy an equal standing in the profession and also in the perception of the consumer. This is fully borne out by examples given in the chapter on Practice.

Despite this apparent inclusiveness, the case for parity with Allopathy and for emulating the modern medicine style of laying out the curriculum and syllabus sprang from the aspirations of BAMS/BSMS and BUMS practitioners who continued to seek greater inclusion of modern medicine in the syllabus and for state approval to practice modern medicine.

## Advent of the Integrated Medicine Course

An arrangement involving so many Boards and institutions was untenable because of the huge variation in the standards of education. Due to this, the government appointed several committees to make recommendations on various aspects of the Indian Systems of Medicine, whether to adopt an integrated curriculum or not, and also on the grant of degrees to the aspiring practitioners of Indian Medicine.

The committees appointed between 1921-1938 recommended an integrated system of medicine by arranging the curriculum in such a way that whatever was weak in the one system could be supplemented and strengthened by the other. At the same time it was expected that this would also help to provide health and medical care to the rural population. The committees believed that while Indian medicine could derive practical value from Western medicine, in turn Western Medicine could also learn much from the philosophic background of Indian medicine, its comprehensiveness, the importance of the Desha (soil) factor, the dietary regimen and the general principles and knowledge behind the use of supra-sensory perception.

Institutions at Kangari, Haridwar, Varanasi and Madras trained several doctors and made efforts to publish books adopting this integrated approach.

## Adverse Reaction to Integrated Medicine

Leena Abraham[7] has described the turmoil that surrounded the education of Ayurveda prior to the establishment of the CCIM. Her research has illustrated the fierce competition that took place between the supporters of Shudh Ayurveda and those that favoured integration. Her research based among others on the work of Paul Brass[8] recounts how there were no less than fifty-five strikes that took place between 1958 and 1964 involving both Ayurvedic and Unani colleges. The main demands centred on parity with Allopathic graduates in pay, employment in government jobs, and better quality training and infrastructure. Meanwhile the Allopaths protested against the inclusion of subjects such as anatomy, physiology, pathology, etc., in Ayurvedic colleges which was considered an encroachment into the allopathic domain and incompatible with traditional medicine aimed at providing "a back door entry" to practice allopathy. It is interesting that similar demands for equivalance and parity continue to be voiced even today and have been receiving support particularly from several state governments.

Constant objections began to be raised against the integrated approach of teaching and training. First

7. Abraham, Leena. "Reproduction of Indigenous Knowledge in Rural Cultures: Ayurveda Education in Contemporary India." In *Sociology of Education in India: Disciplinary Perspective and Contemporary Concerns,* edited by Geetha B. Nambissan and S. Srinivasa Rao. Oxford University Press, (forthcoming).
8. Brass, Paul. "The Politics of Ayurvedic Education: A Case of Revivalism and Modernization in India." In *Education and Politics in India,* edited by SH Rudolph and LI Rudolph. New Delhi: Oxford University Press, 1972.

the allopathic doctors objected to the teaching of modern medicine to Ayurvedic students. Staunch and orthodox Ayurvedic scholars were also opposed to this approach. Practical difficulties were also encountered in teaching modern subjects to Ayurvedic students. Hence the Integrated Medicine course had perforce to be discontinued.

## Indian Medicine Central Council Act, 1970 and Integrated Approach to Education in Indian Medicine

The Central Government enacted the Indian Medicine Central Council Act, 1970 and gave the CCIM responsibility for prescribing:

1. The courses and period of study and of practical training to be undertaken,
2. The subjects of examination and the standards of proficiency to be obtained, in any University, Board or Medical Institutions for grant of recognized medical qualifications;
3. The standards of staff, equipment, accommodation, training and other facilities for education in Indian Medicine;
4. The conduct of professional examinations, qualifications of examiners and the conditions of admissions to such examinations.

The products of the Guru-Shishya tradition or even those who had received certification from state Boards had to be allowed to continue to pursue their profession. Under section 25 of the IMCC Act 1970, there is a provision for direct registration with the Central Council. Even if there was no State Register, a person could not practice after the commencement of the Act without a registration either under the Central Act or under the State Act. A person failing to show possession of any of the recognized qualifications entitling him to practice Ayurvedic/ Siddha or Unani medicine, was not entitled to continue practice. But what are now called non-institutionally qualified Vaids, Hakeems and Siddhars were able to get registration not only permitting them to practice but also to vote to elect members of CCIM.

Interestingly the dominant group in CCIM has been at the forefront in promoting the inclusion of modern medicine in a big way.

## Conclusion

The educational aspect of the Indian medicine systems remained in the forefront during the colonial period. Ayurveda and Unani as medical systems tried to protect and enhance their ideological base by adopting a contemporary outlook. Ironically in the process they were increasingly influenced by western medicine.

The concern of the Central Government is apparent through the decision to enact the CCIM Act 1970 which gave legitimacy to all the practitioners but also aimed at bringing uniformity in the standards of ISM medical education. How successful this attempt has been is addressed in the next sub-chapter.

# II. Status of Ayurveda, Siddha and Unani Education – A Survey

## Introduction and Methodology

For several years the quality of education imparted in the Ayurveda, Unani and Siddha colleges has been a matter of concern. Most of the challenges have revolved around the provision of infrastructure and faculty as prescribed by the Central Council of Indian Medicine (CCIM). Until 2005 CCIM used to grant recognition to new colleges, to review the status of infrastructure, grant permission for increasing seats or for introduction of new courses. The Central government took over powers to grant recognition to new colleges, approve new PG courses or increase the intake of students through an order passed in 2006 which was implemented from 2008 onwards.The number of colleges increased significantly from the year 2000 to 2010 and currently the number of colleges is as follows:

| Systems of medicine | Govt. colleges | Private colleges |
|---|---|---|
| Ayurveda | 55 | 199 |
| Siddha | 2 | 5 |
| Unani | 9 | 30 |

Source: http://indianmedicine.nic.in/writereaddata/linkimages/5995355455-MedicalEducationPartII.pdf (accessed on 1 August 2011).

The purpose behind ASU medical education and its stated objectives is to prepare graduates and post graduates who can help development of the systems and benefit the public by using their special competencies and skills. Somewhere the focus appears to have shifted to how graduates of the system can be best benefitted in finding a useful foothold in the health sector. In pursuing this goal

Meeting with experts of Ayurveda at Mumbai convened by Director, Ayurveda Dr. K.R. Kohli.
Inset: Dr. Kohli, Director, ISM, Maharashtra (left) and Mr. Milind Mahaiskar, Secretary, Medical Education, Maharashtra who were present throughout.

Shri. Rajesh Kishore, Secretary (Health), Dr.M.B. Jani, Director ISM and State Drug Control officers of Government of Gujarat

Meeting with faculty of Institute of Post Graduate Teaching & Reasearch in Ayurveda, Gujarat Ayurved University, Jam Nagar.

Meeting with experts at Bengaluru convened by the Director, Ayurveda Shri G.N. Srikantaiah at extreme right.

Principal Investigator (PI) in discussion with Prof. Ajay Kumar Sharma, Director, National Institute of Ayurveda, Jaipur at OPD & IPD of Madhav Vilas Palace Ayurveda Hospital, Jaipur.

Discussion with the faculty at NIA, Jaipur

the development of the systems has been eroded considerably. Added to this, the approaches of the faculty of Banaras Hindu University (BHU), the Kerala School of Ayurveda, the Gujarat Ayurveda University and the faculty in working in Maharashtra insitutions (Tilak Ayurveda Mahavidyalaya, Pune; Poddar Ayurveda Medical College, Mumbai) seem to differ considerably, at times overriding the objective of following a uniform pattern of teaching and patient care. While a core curriculum as prescribed by CCIM has achieved a degree of uniformity, many products of the institutions have used their educational exposure and training to advance their own practice in a way that has affected the public perception about ASU systems.

In answering the question what benefits has the education sector of ASU given the public, the Principal Investigator (PI) did not go into the infrastructural requirements like the provision of buildings, or the availability of sufficient faculty or hospital beds in great detail. This is because the CCIM and the Department of AYUSH are already

View of Faculty of Ayurveda building, Banaras Hindu University, Varanasi

Meeting with officers, faculty and practitioners of Ayurveda and Unani medicine held at State Ayurvedic College, Raipur
Inset: Dr. GS Badesha, Director AYUSH, Chhattisgarh

View of 500-bed Ayurveda Hospital, Tripunithura, Kerala

View of Tilak Ayurveda Mahavidyalaya, Pune

Meeting with faculty of RA Poddar Medical College, Mumbai

actively engaged in conducting an annual exercise for grant of permission to the colleges when the provision of such infrastructure is being constantly reviewed. But an area which perhaps has not been examined in great depth remains the curriculum and the syllabus of ASU institutions and whether the subjects prescribed and their teaching provides the competencies and skills that should make the ASU graduate and post graduate capable of providing ASU patient-care and other services in a variety of settings like hospitals, dispensaries, in private practice, as teachers and researchers, as the backbone of manufacture, in quality control and finally as good ambassadors of the profession. Only then can the public be said to have benefitted.

In order to examine this, it was necessary to understand what various stake holders have to say – among them educationists, private practitioners commanding a good practice and people of stature in the profession.

The PI therefore set about this in three ways:

1. By holding intensive meetings with a cross section of experts and other stake holders either called by the State ISM Directorates or by the Research council in the case of Unani medicine or through the good offices of the National Institutes of Ayurveda, Unani and Siddha Medicine, individual Vice Chancellors, as in the case of Chhattisgarh or the Gujarat Ayurveda University, Jamnagar who were also consulted.
2. By issuing an online questionnaire with 34 questions in 10 sections.
3. By sending the questionnaires by registered post to the Principals of ASU colleges directly for being filled by a cross-section of the faculty and PG students.

The number of Ayurveda colleges has increased phenomenally to 254, out of which, about 150 colleges have been established after 1980. During the same period, the number of Siddha colleges rose from 3 to 10 and Unani colleges from 28 to 45. Securing an ASU degree was clearly an attractive proposition. Source: http://indianmedicine.nic.in/writereaddata/linkimages/5995355455-MedicalEducationPartII.pdf (accessed on 1 August 2011). Although the CCIM

PI in discussion with Commissioner ISM
at National Institute of Siddha Hospital, Chennai

Meeting with Education experts at NIS, Chennai convened by Shri Chadrashekhar, Commissioner ISM, Tamil Nadu
Inset: Shri Chadrashekhar, Commissioner ISM, Tamil Nadu

Foundation stone and inaugural stone of Ayurveda and Unani (A&U) Tibbi College, Karol Bagh, Delhi.

A view of Ayurveda & Unani Tibbia College, Karol Bagh, Delhi.

has laid down a number of regulations to prescribe the minimum standards of education, these have been ignored at many places. Liberal permissions granted by the State Governments, loopholes in the existing Act and Regulations, weakness in the implementation of standards of education have been held responsible for this state of affairs.[9] The admission capacity in both undergraduate and post graduate courses is very large borne out by the tables below:

Undergraduate ASU Colleges with admission capacity as on 1.4.2010.

| System | No. of UG colleges | Admission capacity |
|---|---|---|
| Ayurveda | 254 | 11927 |
| Siddha | 7 | 350 |
| Unani | 39 | 1757 |

Postgraduate ASU Colleges with admission capacity as on 1.4.2010.

| System | No. of PG colleges | Admission capacity | Exclusive PG colleges/ admission capacity |
|---|---|---|---|
| Ayurveda | 64 | 1110 | 2 / 50 |
| Siddha | 3 | 126 | 1 / 46 |
| Unani | 6 | 75 | 1 / 30 |

While several scattered observations regarding the poor quality of ASU education are available in books and articles, no systematic study (except for a Maharastra centric study done in 2005) could be located. IASTAM conducted a study in the state of Maharastra to examine "status of Ayurvedic medicine education". The survey[10] involved students and faculty at undergraduate and postgraduate

9. Patwardhan, Kishor et al. "Global challenges of graduate level Ayurvedic education: A survey." *Int J Ayurveda Res* 1, no. 1 (2010).
10. The survey was designed and undertaken by a team led by Vd. Vilas Nanal and Dr. Narendra Bhatt for IASTAM – the Indian Association for the Study of Traditional Asian Medicine in 2005.

Meeting with Unani experts organized by Prof. S Shakir Jamil, Director General, CCRUM (1) at the CCRUM headquarters in New Delhi. Others are Hakim Syed Khalifathullah (2), Dr. Ahmad Yasin (3) and Prof. Anis A Ansari (4). In the picture to the left are Prof. Syed Zillur Rahman and Hakim MS Usmani.

PI with Prof. MA Jafri, Director, NIUM, Bengaluru.

Meeting with the faculty of NIUM, Bengaluru.

levels and the management of 15 colleges. The need for drastic reforms in Ayurvedic education was strongly emphasised.

## Emphasis on Modern Medicine

The emphasis on Modern medicine has continued years. A glance at the undergraduate curriculum for Ayurveda (current) shows the requirements of understanding Modern medicine. There is no indication as to which portion is for overall background information and which is for in-depth knowledge. The incorporation of such a wide spectrum of Modern Medicine content has been criticized by many of the persons interviewed by the PI. The Modern Medicine part of the curriculum can be seen at **Annexure-I.** The full syllabus of CCIM for Ayurveda can be viewed at **http://www.ccimindia.org/curriculum_ayurveda_ug_syllbus_2009.html** (accessed on July 10, 2011).

The present survey was primarily planned to evaluate the "extent of exposure to clinical and allied skills" extended during the BAMS, BUMS & BSMS courses and PG courses as perceived by a sample groups of teachers and postgraduate

students spread over the country. The focus of the study was to ascertain how far the stakeholders felt that a significant part of the syllabus of UG and PG is specifically directed towards providing patient-care. Also to seek suggestions on how the focus could be modified to benefit the public and orient the ASU practitioner as a person with competencies and skills that were capable of responding to specific medical and health concerns.

A special questionnaire **ASU Curriculum Evaluation Questionnaire** was designed to review the status of ASU education in the country **(Annexure-II)**.

## Purpose and Scope of Review

The purpose of the review was to seek answers to the following questions:

1. Does the CCIM Ayurveda/Siddha/Unani (ASU) Curriculum identify and provide the necessary skills, knowledge, and experience to turn out practitioners that inspire confidence in providing medical and public health care through ASU systems of medicine working collaboratively and in a variety of health settings?
2. Does the ASU Curriculum have sufficient practical content and application to equip the graduate/postgraduate with competencies and skills to make him a sought after ASU health provider because of his special training?
3. The scope of the review included:
   - Structure and in particular the syllabus followed from year-to year;
   - Terminology – to ensure consistency with the objective of preparing the graduate/ post graduate for using his knowledge and skills for practical application in the areas of research/education/industry but predominantly practice;
   - Content – to ensure current relevance, and focus on preventive, promotive and curative health in practical terms based on ASU principles
   - Suggestions on additional tools and resources needed to upgrade the practical aspects of teaching with the aim of producing good physicians for the benefit of society.

## About the Questionnaire

A list of 34 items was prepared on the basis of interactions with ASU administrators and educationists and keeping the stated aims of the ISM policy in view. Reports of various committees, journals, news reports, and the National Health Policy documents were referred to for deciding the list of questions. The questionnaire comprised of 10 sections i.e., A to J which broadly covered the evaluation of the curriculum content (existing and the new one) as displayed on the CCIM website, admission requirements, internship requirements and practical aspects. The respondents were also asked to furnish basic data on age, gender, institutional affiliation and their present status (faculty or administrator or post graduate scholar). Furthermore, the questionnaire contained a privacy clause stating the purpose of the study and assuring strict confidentiality. The respondents were asked to sign a declaration stating that their participation in the study was purely voluntary and the responses given were based on their own individual perceptions and that they were not compelled to respond in any particular by the investigators or by any other authority.

The following methods were adopted to obtain data from various people of all categories who are related to field. The contacts were provided by the Rashtriya Ayurved Vidyapeeth, New Delhi and obtained from the CCIM's website.

i. Kwik survey questionnaire

ii. E- mail questionnaire

iii. Postal questionnaire – Sent by registered post to the Principals of ASU Colleges.[11] List of these colleges appears at **Annexure-III**. The three surveys resulted in 185 individual responses (Ayurveda: 124, Unani: 55, Siddha: 06).[12]

**Kwik Survey**
(A leading free online service)
**Questionnaires issued**

| | | |
|---|---|---|
| Ayurveda | : | 294 |
| Unani | : | 42 |
| Siddha | : | 8 |

11. Questionnaires were sent by post to 114 Ayurveda, eight Siddha and 41 Unani colleges and followed up with reminders sent by registered post to the Principals to have the questionnaires filled by the faculty and by the PG and a representative group of other students.
12. As very few responses were received only the opinions and suggestions have been incorporated.

The questionnaires were repeated online again. Personal interviews were held with a cross-section of experts invited to CCRUM (for Unani Medicine) and by the ISM/Ayurveda Directors of Maharashtra, Gujarat, Karnataka, Chhattisgarh, Tamilnadu and Kerala in addition to those invited by the Directors of the National Institutes of Ayurveda, Unani and Siddha Medicine to meet the PI. Complete list of these experts is available at Annexure-IV.

The three sub-chapters that follow give the responses received from Ayurveda, Siddha and Unani faculty members and post graduate students. They also encompass detailed advice given by experts who participated in a series of interviews which were recorded by the PI and held at different places in the country including at CCRUM Delhi in respect of Unani Medicine.[13]

13. In the three sub-chapters describing the responses there are "opinions & suggetions" under each section. These include the views of numerous experts whose testimony was recorded and incorporated at relevant places.

# II(a). Appraisal of the Responses Received on Ayurveda Curriculum

## 1. Findings on Ayurveda curriculum evaluation

Under the section of curriculum evaluation, respondents were asked to comment on whether the Ayurveda Curriculum builds the skills and competencies that a practitioner would need to perform his duties connected with the 4½ + 1 year professional course.

The following Pie Chart depicts the opinion of the respondents -

A high percentage of the respondents (46%) opined that curriculum description strongly needs reform. Others (27%) opined that curriculum description does not capture the duties; 13% opined that the curriculum captures the duties and the remaining 14% did not respond.

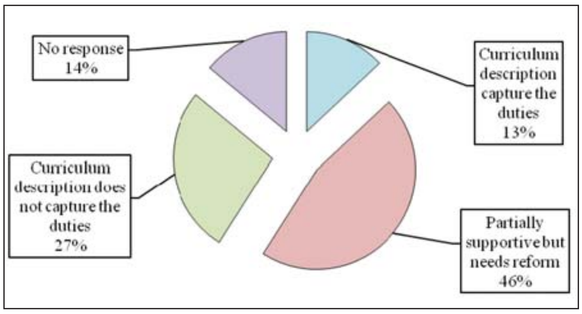


Figure 1. Findings on Ayurveda curriculum evaluation.

### Opinions and suggestions:

- **Aims and objectives of BAMS education:** The aims and objects for a BAMS graduate are defined by CCIM as follows: "Ayurveda education should aim at producing graduates of profound scholarship having scientific knowledge in accordance with Ayurvedic fundamentals backed by extensive practical training to enable them to become efficient Teachers, Research workers, Kaya Chikitsakas (Physicians), Shalya Chikitsakas (Surgeons), fully competent to provide healthcare as a part of the medical and health services of the country". The general response indicated that the curriculum had failed in achieving this objective. The curriculum was too overcrowded; it contained too much theoretical knowledge, and expected regurgitation of factual information. Both the National Health Policy 1993 and National Policy on ISM&H 2002 had observed that ISM & H had not been able to play a significant role in the health care delivery system for want of legitimacy in handling public health programmes. This was despite the existence of a huge infrastructure to support professional education. The reason for this failure lies to a large extent in the unachievable aims and objectives set out by the CCIM for the graduate.

- **Mixed education:** A constant complaint was that the BAMS graduates' capabilities are less than that of an MBBS doctor and more than of a nurse. Their training cannot give them skills to work independently as Ayurveda physicians, because they are given part education in modern medicine and part in Ayurveda.

- **Period of curriculum is not suitable:** The present length of the curriculum is 4½ years divided into 3 Professionals of 1½ years each, plus a one year internship programme. Emphasis should be given more on practical subjects instead of on theoretical subjects. The introduction of year wise pattern for Pre and Para clinical subjects with 1½ year for Clinical subjects was favoured.

- **Lack of interest in the curriculum:** Though the total programme length (4½ + 1) year was sufficient, the structure of the syllabus was found defective; "the graduate comes out almost empty handed at the end of the programme" was one observation. The curriculum even though it promised a lot, was unable to meet present day expectations. No evidence based data was put forward relating to Ayurvedic treatment and the research done in PG departments of many Institutions was of substandard quality. Day by day even once reputed Institutions were deteriorating. The curriculum was asked to be restructured properly keeping in mind the types of duties the graduate was expected to perform. The syllabus needed to be revised in a way that it provided more practical content to the undergraduate level with greater research orientation at the postgraduate level.

- **Performance through learning is a distant dream:** One respondent put it as follows "A (normal) student is expected Learn – Understand–Reproduce-Practice–Perform." With the present curriculum the student simply reproduces to acquire a Degree, and begins practice without skills which affects his subsequent performance adversely.

## 2. Findings on Ayurveda admission requirements

Under the section of admission requirements respondents were asked whether the present requirement of 10+2 school level with biology background would suffice or whether there was a need to introduce any specific subjects at the entrance level to enable the student to fulfill the course objectives.

### i. Findings on basic qualification required for admission in Ayurveda

The following Pie Charts depict the opinion of the respondents -

A high percentage of respondents i.e. 76% (46% + 30%) opined that admission requirements are not satisfactory and thus needs change. Few percentage of respondents i.e. 11% felt that admission requirements are satisfactory. And another 13% had not responded.

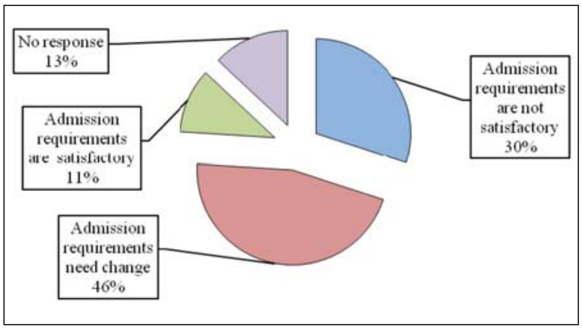


Figure 2. Findings on basic qualification required for admission in Ayurveda.

### ii. Findings on need of special subjects for admission

A high percentage of respondents (38%) felt that current 10+2 with Biology background was essential for admission, but change was also needed. 32% of respondents felt that specific subjects are essential for pursuing the course but 19% opined these are unnecessary and another 11% had not responded.

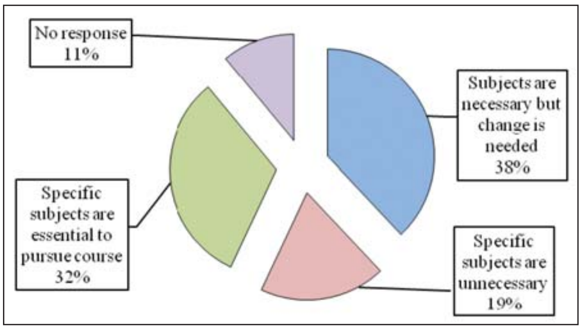


Figure 3. Findings on need of special subjects for admission.

### Opinions and suggestions on Ayurveda admission requirement:

- **Basic knowledge and background of 10+2 science education is essential:** The present entrance requirement of passing 12th standard examination with Physics, Chemistry and Biology is necessary to fulfill the course objectives. A knowledge of Biology is the base on which the course is built. Knowledge of Physics and Chemistry helps the student understand the intricacies of different physical and chemical functions of the human body.
- **Ayurveda Colleges to be permitted early admission by AYUSH/CCIM:** Presently most of the Ayurvedic colleges receive clearance from AYUSH/CCIM for taking admissions during the mid/end of the academic year. By that time most of the students take admissions in one course or the other. Only left over candidates opt for ASU courses. And they continue with the course just to acquire the degree. The department should initiate the admission process early so as to attract better students.
- **Are Pre-Ayurveda courses essential?** Introduction of Pre-Ayurveda course after 10$^{th}$ standard instead of 10+2 as a prerequisite to join the BAMS course is not in the interest of Ayurveda. It will damage Ayurveda, because for almost all professional courses 10+2 is the minimum qualification. If Pre-Ayurveda course replaces 10+2 then the status of the professional course will be in question.

## 3. Findings on curriculum content

### i. Findings on sequence of subjects presented in curriculum

The following Pie chart depicts the opinion of the respondents -

A high percentage of respondents i.e. 76% (42+34) opined that sequence of training is inadequate and needs modification. A smaller percentage of respondents (17%) felt that it is adequate and remaining 7% had not responded.

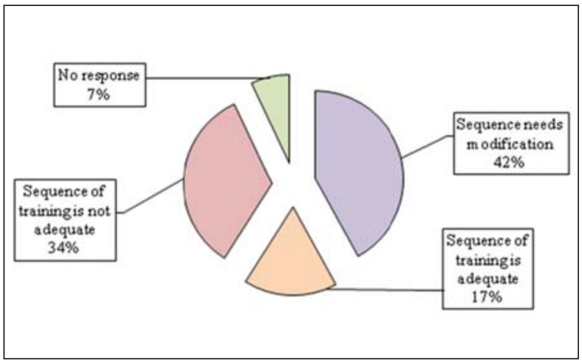


Figure 4. Findings on sequence of subjects presented in curriculum.

## ii. Findings on time allocation for each subject in curriculum

A high percentage of respondents i.e. 81% (43+38) opined that time allocation in curriculum is insufficient and needs change and they suggested a few changes. A smaller percentage of respondents (14%) felt that it is sufficient and the remaining 5% did not respond.

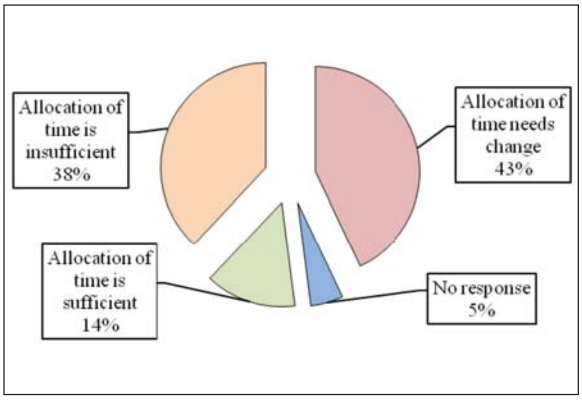


Figure 5. Findings on time allocation for each subject in curriculum.

## iii. Findings on inclusion of necessary learning objectives in relation to individual subject

A high percentage of respondents i.e. 87% (45+42) opined that learning objectives in the curriculum are missing or only partially included. A smaller percentage of respondents (12%) felt that learning objectives are included, and the remaining 1% had not responded.

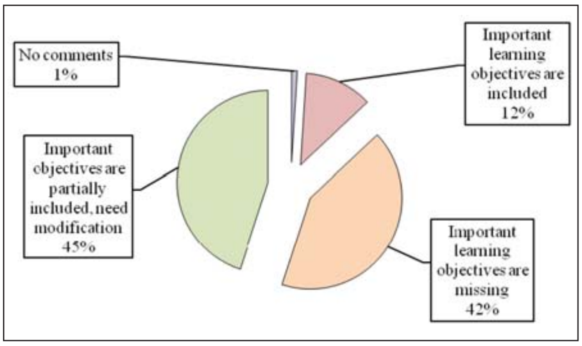


Figure 6. Findings on inclusion of necessary learning objectives in relation to individual subjects.

## iv. Findings on balance between theory and practice

A high percentage of respondents i.e. 72% (39+33) opined that balance between theory and practice is lopsided or exists partially. Other respondents (22%) felt that the balance between theory and practice is alright and the remaining 6% had not responded.

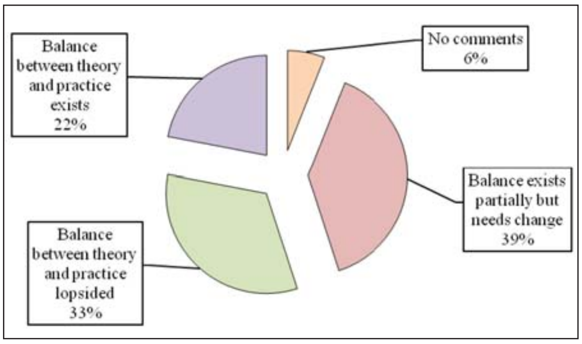


Figure 7. Findings on balance between theory and practice.

## Opinions and suggestions on Ayurveda curriculum content

- **General objectives of preparing the BAMS graduate are overlooked in the curriculum content:** The objective of the graduate curriculum should be to produce a general practitioner and not an expert of any particular specialty. Hence, he must be equipped with skills to handle routine illnesses as a primary care giver. Moreover, he should be able to recognize situations where secondary and tertiary care is required. As a result of the absence of clearly defined objectives, almost all subjects are crowded together and there is unnecessary content. The subject content of almost all the subjects gives an impression that the objective is to create proficiency in every

subject, which is not possible and cannot be expected from a graduate. There is a need for restructuring of the syllabus rather than inclusion of new items. The whole curriculum needs to become more practical oriented.

- **Subjects without learning objectives:** As per the existing curriculum available on CCIMs official website, the student is supposed to clear 17 subjects in 3 professional examinations. But no subject in the curriculum is provided with learning objectives. Learning without specified objectives leads to recitation and recapitulation only. Learning objectives are essential to assess the knowledge gained by the student and capability to exhibit his skills at the end of course. BAMS being a medical science there is every need to be clear about learning objectives. Department of AYUSH should nominate the Committee members who make the syllabus or else see that the AIIMS type syllabus is used as a guideline while formulating the learning objectives.

- **Repetition of Syllabus content to be omitted:** Sequencing of training (i.e. order of subjects presented) within the curriculum do not properly address course pre-requisites and/or co-requisites. The curriculum content is a mixture of ancient and modern methods of teaching and learning medicine. Such a mixture of methodologies has resulted in repetition of the subject content. This has to be given attention by separating Ayurvedic and Modern medicine content into separate papers and to induct experts in the concerned fields from faculties of Ayurveda and Allopathy (both) to teach such subjects independently.

- **Knowledge of Sanskrit is not compulsory in the present day context:** Some people argue that knowledge of Sanskrit is essential for understanding Ayurveda. This is partially true. Knowledge of Sanskrit will definitely be useful but it does not necessarily mean that a person not having the knowledge of Sanskrit will not be able to understand Ayurveda. Hence absence of knowledge of Sanskrit is not a major hurdle in undertaking training of Ayurveda. Regarding subject content of Sanskrit a serious thought needs to be given. The current subject content of Sanskrit appears to be designed to acquaint the student with the Sanskrit grammar, rather than to facilitate the students in reading and understanding the Sanskrit text in the Ayurvedic classics. A text book based Sanskrit learning course may be introduced for undergraduates of Ayurveda. Such a text book may be designed to contain paragraphs, phrases, terminologies and verses drawn from Ayurvedic classics. The current examination system of this subject should be concise and confined to one theory paper of 100 marks without viva voice. It should cover 25% grammar and 75% descriptive texts and translations. Sanskrit language teachers scholars must be given the responsibility of teaching this subject.

- **Theoretical subjects to be reorganized:** The curriculum is didactic and theoretical. In the present curriculum some of the subjects are 100% theoretical. They need to be removed or to be reorganized. For example subjects titled Ashtanga Hridaya, Padarth Vigyan and Ayurvedic Ithihasa of I$^{st}$ Professional of BAMS can be reorganized into one subject under the heading of Ayurvedic Philosophy which can be examined through one paper of 100 marks of which Part – A covers Ayurvedic Ithihas (History of Ayurveda) + Siddhantas & Darshanas and Part – B covers Ayurvedic fundamentals. As this is entirely theoretical there is no need for a practical and viva-voce examination.

- **Essential to introduce subjects of Modern medicine with requisite syllabus focusing on public healthcare:** Subjects like principles of Biochemistry, Microbiology, Pharmacology, Forensic Medicine and Toxicology, Preventive and Social Medicine need to be introduced in the curriculum as independent subjects. They should never be taught under any Ayurvedic subject title. Moreover allopathic experts of concerned subjects must be given the responsibility of teaching these subjects independently.

- **Programme review to be done at regular intervals:** Presently there is no mechanism for reviewing the programme. A periodic review of each academic programme is needed to maintain relevance and promote excellence. The review should be taken at an interval of 3–5 years.

- **Professional bodies to be involved in curriculum designing:** Presently professional curricula are

designed by the academic boards of the respective councils and the councils are dominated by non-academicians. The academic board members belonging to senior age groups may not be conversant with latest technology, which in turn hampers development of curriculum setting. It would be ideal if members of NCERT, MCI, Senior Ayurvedic faculty members (retired and working) from clinical and non clinical specialties as well as other professional bodies are involved in designing the curriculum. Provisional copy of syllabus needs to sent to all institutions for their opinion and comments and to be made available on the website for incorporating suggestions from all those related to the field. Opinions, remarks and suggestions need to be reviewed before being included in the curriculum finally.

## 4. Findings on resources

### i. Findings on availability of resources in relation to tools/ equipments/ practical components

The following Pie Charts depicts the opinion of the respondents -

A high percentage of respondents i.e. 81% (43+38) felt that institutions are short of resources supply or partial supply. Other respondents (13%) felt that there is adequate supply of resources for practical component, and remaining 6% had not responded.

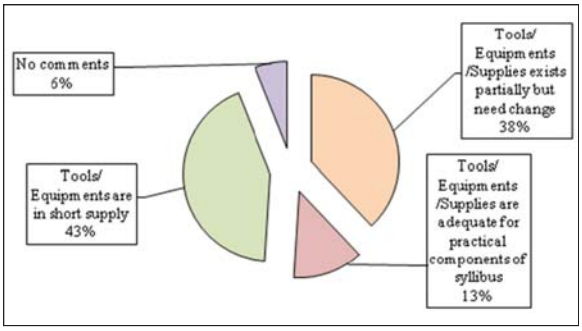


Figure 8. Findings on availability of resources in relation to tools/equipments/practical components

### ii. Findings on resources in relation to text books

A high percentage of respondents (49%) opined that the prescribed text books require amplification and updation. 40% respondents felt that the prescribed text books are insufficient. Other respondents (5%) felt that prescribed texts are sufficient, and remaining 6% had not responded.

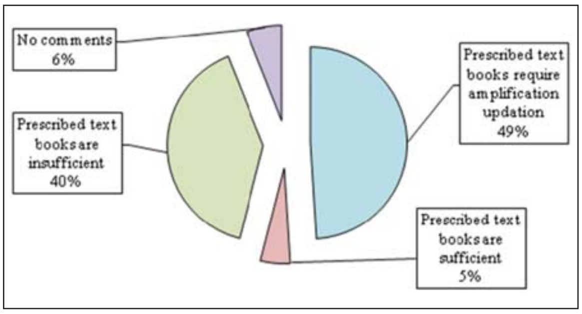


Figure 9. Findings on resources in relation to text books.

### iii. Findings on learning resources (print media, audio-visual materials, etc.)

A high percentage of respondents (57%) felt that Audio visual learning resources are inadequate, 27% opined that AV resources exists but need enhancement, few 15% have opined that AV resources are adequate, and others 1% had not responded.

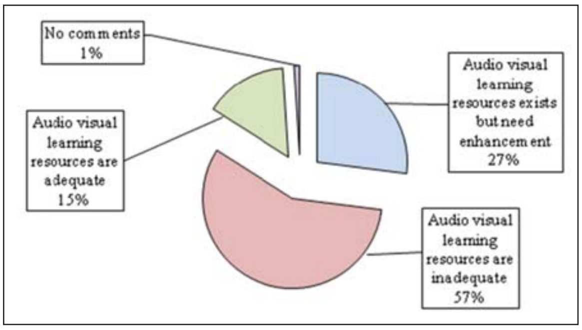


Figure 10. Findings on learning resources (print, media, audio-visual materials, etc)

### iv. Findings on technical resources

A high percentage of respondents (49%) felt that computer support is inadequate, 29% opined that computer support exists but needs enhancement, another 21% opined that computer support is adequate, and the remaining 1% had not responded.

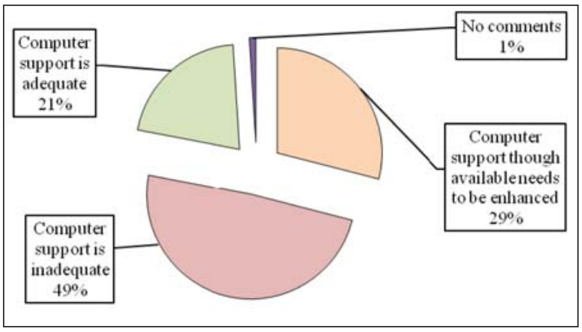


Figure 11. Findings on technical resources.

### v. Findings on specialized resources to strengthen the delivery of the programme

A high percentage of respondents (36%) felt that specialized resources exist but need augmentation, 29% opined that they were inadequate for programme delivery, another 18% have opined that specialised resources are adequate, and remaining 19% had not responded.

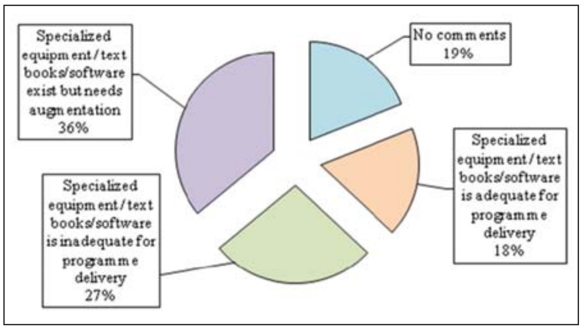


Figure 12. Findings on specialized resources to strengthen the delivery of the programme.

### Opinions and suggestions on Resources

- **Inadequate supply of equipments, tools, and clinical material to meet learning objectives:** Initially the student bed ratio was 1:5, which became 1:3 and now it is 1:2. Still there are some people who are thinking of reducing it to 1:1. Clinical material is the most essential component of each and every medical institute, irrespective of the pathy. Most of the Ayurveda colleges do not have enough patients and, the bed occupancy is very poor. There cannot be any medical education without the presence of clinical material. Ayurvedic hospitals and dispensaries are largely located alongside allopathic hospitals within the same campus whose functioning is better compared to individual Ayurveda units. Even if that is not so, it is better to attach an Ayurvedic teaching hospital to the nearest allopathic hospital so that there is exposure to clinical material.
- **Non-availability of learning resources & technical inputs:** There is a dearth of adequate learning resources i.e. printed material, audio-visual material, specialized software etc. and technical inputs to actively engage the students. Material or equipments specific to covering the curriculum of Ayurveda are not available. Such material needs to be created. At present awareness is there and computers are purchased but no qualified staff is available to guide the students and proper time is not allotted either. There should be a fixed number of hours allotted to teach the students about how to utilize these inputs.
- **Acute need for human resources like paramedical and non teaching staff:** Paramedical staff who are technically qualified like Ayurvedic Pharmacists, Panchakarma technicians, Ksharasutra technicians, Lab technicians in the Physiology Deptt., Anatomy Lab. Assistants, Herb collectors in Dravyaguna departments, Drugs store keeper in Rasatantra and Baishajya Kalpana department, ward boys in hospitals. Non teaching staff mainly Librarians etc. are also required to participate in the smooth functioning and development of each department. But there is no controlling body even at the central level to regulate education of such personnel; these aspects are not included among essential requirements for establishing a department.
- **Organizations involved in publication of Ayurveda books & journals to be encouraged:** Books in Ayurveda are minimal as they do not have sufficient market. It should be compulsory for colleges to purchase new books on Ayurveda. Through this a market would be available for sale of books and writing books would be pursued. National/State libraries do purchase Ayurveda books – as Ayurveda is not accepted as science or a part of humanities. As a result textbooks are inadequate in relation to the present day needs and revival of interest in traditional medicine. The textbooks should be problem oriented and updated with research information. The concept of designing text books with multiple contributing authors needs to be inculcated in the ASU sector and the publication of books in regional languages should be encouraged. Efforts should be made to list and print the Ayurveda textbooks from Indian manuscript libraries.

## 5. Findings on programme instruction/evaluation methods

### i. Findings on instructional methods

The following Pie Charts depicts the combined opinion of the respondents –

A high percentage of respondents (41%) felt that evaluation methods needs change, 33% opined that methods are balanced and adequate, others 22% have opined that methods are not balanced and the remaining 4% had not responded.

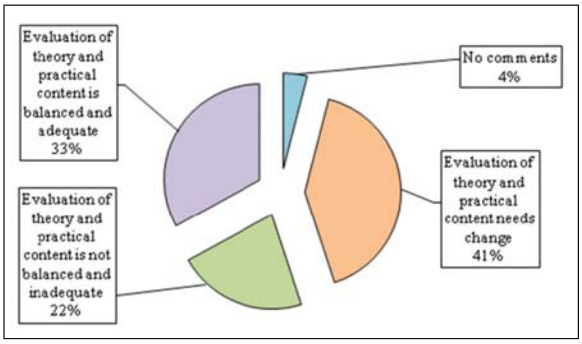


Figure 13. Findings on instructional methods

### ii. Findings on evaluation method for a programme/subject

A high percentage of respondents (78%) suggested for additional evaluation methods and remaining 22% had not responded.

### iii. Findings on recommendation for additional methods for evaluation

A high percentage of respondents (87%) suggested a system for assesing potential instructors and remaining 13% had not responded.

### Opinions and suggestions on Programme Instruction/Evaluation Methods:

- **Inappropriate evaluation methods:** Presently the assessment methods are subjective in nature and the assessor is not answerable to anybody. Examiners count pages and length of the answer instead of the quality of the answer. In any examination, when a question setter sets a paper he should provide the key answers which ought to be circulated to all evaluators. Clear grading levels need to be laid down, based upon attendance, involvement and performance. In the practical examination instead of allotting marks for assessment, appraisal should indicate either "Qualified or Un-Qualified" to remove bias. Evaluation methods based on grading as advocated by UGC need to be adopted. Spot evaluation will prove ideal for enhancing confidence among the students. It will also institute credibility into the evaluation system. Presently the assessment methods are teacher centric; they need to become more and more student centric.
- **Examination pattern should undergo reform:** Pattern of examination needs structural changes. Provision of intermittent internal assessment at least twice in six months is required to be introduced. The internal assessment method should be open ended. Students should be given assessed answer sheets, so that he comes to know where he erred. The question paper should be divided into at least three sections. One section devoted to very short answers/multiple choice questions, another to small answer section and the third one for Long answer section (with choice), where descriptive capability of the student can be assessed.
- **Medium of Instruction must be in English only:** Presently most of the states conduct ASU courses in regional languages. As the students taking admission into these courses are mostly from English medium students up to their 10+2 level, once they are admitted they are forced to work in the regional languages which they may have studied as a second language during their schooling. The medium of instruction/ teaching for both UG/PG should be in English only and it should be common to all colleges. That will also improve confidence level vis-à-vis students of modern medicine.
- **Standards to be followed to recruit Lecturers/ Research Officers:** Qualification and experience may not be the only criteria for assessing the qualities of potential instructors. Instead, the capacity to communicate and teach should be given due consideration. Group discussion is also one of the tools to identify those who can become good teachers. Research Officer's recruitment in CCRAS does not follow any speciality-wise recruitment. A research officer from a non clinical background is posted to the clinical side. Then how can such a person proceed for clinical research without knowing the basis. So speciality-wise recruitment should be favoured in teaching and research organizations.
- **Performance based promotions to faculty to be made compulsory in all Ayurveda institutions:** Presently there is no regulatory mechanism to assess the capabilities of faculty

members at national and state level institutes. Every instructor/faculty member must be asked to submit an Annual Performance Report (APR), and it should be screened and assessed based on the number of papers published in reputed and peer reviewed journals; Research work done/guided during academic year; authorship of a book; presentations/lectures at conferences; number of credits earned by attending CMEs/ ROTPs/workshops etc. utilization of latest technology and teaching methodologies; active involvement/ participation in various activities of the department, college, or system as whole. This APR should be linked with future career prospects.

- **Ayurveda Teaching modules to be needed:** Present method of teaching in Ayurveda colleges is didactic and revolves around classical content, rather than practical application. Interactive learning methods need to be introduced. This is possible only when the instructors are provided with proper subject wise teaching modules prepared as per the prescribed syllabus. These teaching modules should be prepared in the form of books and power point presentations and sent to all colleges. The responsibility of preparing teaching modules should be given to Rashtriya Ayurveda Vidyapeetha (National Academy of Ayurveda).

- **Re-Orientation Training Programme (ROTP) to Ayurveda Teaching faculty on the content of modern medicine and allied sciences:** Allopathic subject content should be taught by instructors qualified in the relevant allopathic subject. For that the allopathic content in the curriculum should be separated and should have an independent identity in the curriculum. The ROTP should be designed by Deptt. of AYUSH alongwith Deptt. of Health & F.W to train ASU faculty in modern medicine content covered in the ASU syllabus e.g. Kaya Chikitsa faculty should undergo ROTP on General Medicine contents covered in ASU syllabus, Shalya Chikitsa faculty in ROTP on General Surgery contents covered in ASU syllabus, faculty of Panchakarma Dept. needs to undergo ROTP on Physical medicine and Rehabilitation methods and likewise. This ROTP should not be conducted by ASU fraternity; rather it should be organized by allopathic institutions in their campuses. For Non-clinical subjects also faculty members of Ayurveda should be made to compulsorily undergo specialized ROTP e.g. Dravyaguna Deptt. faculty needs to undergo ROTP in Pharmacognosy, Bio-analytical and standardization methods; Rasatantra & Baishajya Kalpana Dept. faculty needs to undergo ROTP on standardization and modern pharmaceutical methods.

- **Ayurveda PG (MD/MS) specialties to be re-oriented:** Presently CCIM has allowed PG in 22 specialties. The specialties mentioned at S.No 8,13,14,15 and 16 in the following list will be awarded the title of Master of Surgery (M.S) after the completion of the 3 years of PG course. The post graduates who are awarded this degree will be under the false impression that they are eligible to practice surgery. But legally they will be punished if they do so. And the specialties at S.No. 20, 21 and 22 have no reference in the classical texts. Ayurveda institutions do not have infrastructure and faculty to conduct these courses. Still if somebody completes this course he will be eligible to join as Lecturer in a private college or in a govt. institution, but will not be able to practice legally. So if Government wants to conduct these courses then those that gain proficiency need to be given legal status, or such courses should not be encouraged. Specialties should be designed to use the real potential of Ayurveda, for example specialties like M.D. (Jara Chikitsa-Geriatrics in Ayurveda), M.D. (Vrisha Chikitsa-Reproductive medicine in Ayurveda), M. Sc. (Applied Nutrition in Ayurveda). Jara Chikitsa and Vrisha Chikitsa have been mentioned as special subjects during Samhita period itself and these have current day significance also and are becoming increasingly important. If these subjects are introduced as subspecialties then Ayurveda will be recognized as having practical value.

### Ayurvedic Post-graduate degree specialties

(1) Ayurveda Vachaspati (M.D.-Ayurveda) - Ayurveda Sidhanta (Fundamentals of Ayurveda)

(2) Ayurveda Vachaspati (M.D.-Ayurveda) - Ayurved Samhita (Lexicons of Ayurveda)

(3) Ayurveda Vachaspati (M.D.-Ayurveda) - Rachna Sharir (Anatomy in Ayurveda)

(4) Ayurveda Vachaspati (M.D.-Ayurveda) - Kriya Sharir (Physiology in Ayurveda)

(5) Ayurveda Vachaspati (M.D.-Ayurveda) - Dravya Guna Vigyana (Materia medica)

(6) Ayurveda Vachaspati (M.D.-Ayurveda) - Ras Shastra (Metals and minerals)

(7) Ayurveda Vachaspati (M.D.-Ayurveda) - Bhaishajya Kalpana (Pharmaceutics)

(8) Ayurveda Dhanwantri (M.S.-Ayurveda) - Prasuti Tantra Evam Stri Roga (Gynaecology and Obstetrics)

(9) Ayurveda Vachaspati (M.D.-Ayurveda) - Kaumar Bhritya (Paediatrics)

(10) Ayurveda Vachaspati (M.D.-Ayurveda) - Kayachikitsa (Internal medicine)

(11) Ayurveda Vachaspati (M.D. -Ayurveda) - Swastha Vritta (Community medicine)

(12) Ayurveda Vachaspati (M.D.-Ayurveda) - Rog Nidan Evam Vikriti Vigyana (Pathology)

(13) Ayurveda Dhanwantri (M.S.-Ayurveda) - Shalya Tantra - Samanya (General surgery)

(14) Ayurveda Dhanwantri (M.S.- Ayurveda) - Shalya Tantra - Kshar Karma Evam Anushastra Karma (Para surgical procedures)

(15) Ayurveda Dhanwantri (M.S.-Ayurveda) - Shalakya Tantra - Netra Roga (Ophthalmology)

(16) Ayurveda Dhanwantri (M.S. -Ayurveda) - Shalakya Tantra: Shiro-Nasa-Karna Evam Kantha Roga (Ear nose throat)

(17) Ayurveda Vachaspati (M.D -Ayurveda ) - Shalakya Tantra - Danta Evam Mukha Roga (Dentistry)

(18) Ayurveda Vachaspati (M.D.-Ayurveda) - Mano Vigyan Evam Manas Roga (Psychiatry)

(19) Ayurveda Vachaspati (M.D.-Ayurveda) - Panchkarma (Biopurificationtherapeutics)

(20) Ayurveda Vachaspati (M.D.-Ayurveda) - Agad Tantra Evam Vidhi Vaidyaka (Forensic Medicine & Toxicology)

(21) Ayurveda Vachaspati (M.D.-Ayurveda) - Sangyaharana (Anesthesiology)

(22) Ayurveda Vachaspati (M.D.-Ayurveda) - Chhaya Evam Vikiran Vigyan (Radiology)

- **Ayurveda to be part of Central Universities:** Department of AYUSH needs to take the initiative to introduce traditional systems of medicine as a part of the subjects covered by Central Universities to promote Interdisciplinary Research in Ayurveda. This approach will attract the scientific community towards Ayurveda. ASU systems will flourish only when the cross-section of related disciplines use the resource material from AYUSH systems and become involved in working on its principles and effectiveness.

- **Introduction of Post Graduate Diploma in Modern therapeutics (PGDMT) for Ayurveda graduates & Ayurveda Therapeutics (PGDAT) for Allopathic graduates:** At most of the conclaves on the Allopathy and AYUSH systems, the very first discussion starts with a discussion on whether ASU physicians are allowed to prescribe allopathic medicines or not. This discussion never concludes. But it is a practical problem and has to be addressed by the government. This has to be considered from several angles but chiefly from the point of public health benefits. If Government considers that health problems can be tackled by Ayurveda physicians they must be encouraged. Most of the State Government have a soft corner for Rural Medical Practitioners (RMPs) because they are influential in the community. Recently Government of Andhra Pradesh took a decision to train RMPs having 10$^{th}$ as basic qualification to prescribe allopathic medicines at the rural level. The Government of India was planning to introduce Bachelor of Rural Health (BRHS) Service course to meet the needs of the rural people. But Ayurveda physicians are already servicing the rural community. This manpower should be utilized properly. To get a legal status for Ayurveda doctors to practice allopathy it is advisable to introduce a course titled PGDMT (1½ year duration) under National Board of Examinations (NBE). This will act as bridge course between Ayurveda and Allopathy. And it is also advisable to introduce PGDAT (1½ year duration) under CCIM to enable allopaths to practice Ayurveda. In the long run this will give fruitful results.

## 6. Findings on graduation and employment requirements

The following Pie Charts depicts the opinion of the respondents -

A high percentage of respondents (34%) felt that graduate requirements are inadequate, 26% opined that requirements needs change, another 28% have opined that methods are adequate and the remaining 12% had not responded.

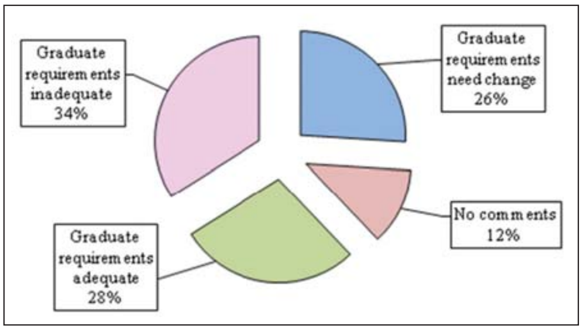


Figure 14. Findings on graduation and employment requirements.

The following Bar Chart depicts the three most important type(s) of job options available to graduates of ASU medicine -

A high percentage of respondents (72%) selected working as resident doctors in general hospitals/ nursing homes as employment option, 59% opted for private practice and the remaining 17% other choices.

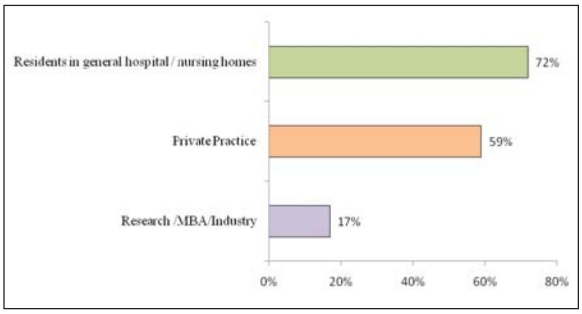


Figure 15. Findings on employment options.

### Opinions and suggestions

- **Limited career opportunities:** Graduates of Ayurveda medicine are having limited opportunities for further career growth. Some options given are- 1. Post graduate/ Doctoral study of Ayurveda either by merit or under management quota; 2. Ayurveda Private Practice/ Panchakarma specialist; 3. Govt. service as Medical Officer/Lecturer; and 4. Other interdisciplinary courses like M.Sc. (Anatomy/Physiology/Biochemistry/Clinical Research/Nutrition etc.) or MBA (Hospital/ Healthcare management) or different positions in Pharma industries.
- **Government has to create more employment for Ayurveda professionals:** Presently Ayurveda doctors have few options of working in the government sector i.e. in CGHS, ESI and state Govt.'s are few in comparison to the number of graduates produced each year. Ayurveda doctors should be posted in Railway hospitals, ESI hospitals, ECHS (Ex-servicemen Contributory Health Scheme) hospitals etc. The Dept. of AYUSH has to convince the Health & Family Welfare Departments to recruit Ayurvedic specialists in Modern Specialty hospitals e.g. as an Ayurvedic Paediatrician (M.D. – Kaumarabhritya/Balroga), Ayurvedic General Physician (M.D. – Kayachikitsa) in Allopathic Cancer hospitals and in corporate hospitals as is being done in Medanta Institute, Gurgaon and Moolchand Hospital, Delhi.

## 7. Findings on internship term

The following Pie Charts depicts the opinion on the internship term –

### i. Findings on appropriate sequence of internship term

A high percentage of respondents i.e. 70% (43+27%) felt that internship period is not properly sequenced thus needs change, 11% opined that internship is properly sequenced, and remaining 19% had not responded.

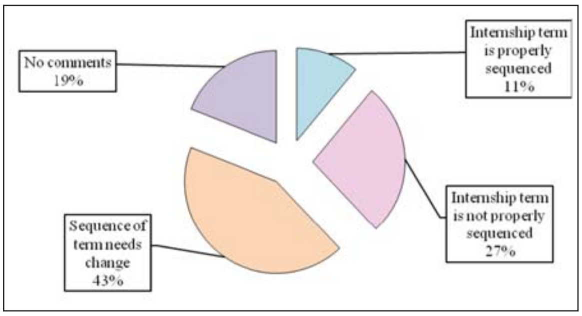


Figure 16. Findings on sequence of internship.

### ii. Findings on objectives of internship

A high percentage of respondents i.e. 42% (26+16%) felt that objectives of internship are

inadequate to build knowledge and thus needs modification, 28% opined that internship is clear and sufficient, and the remaining 30% had not responded.

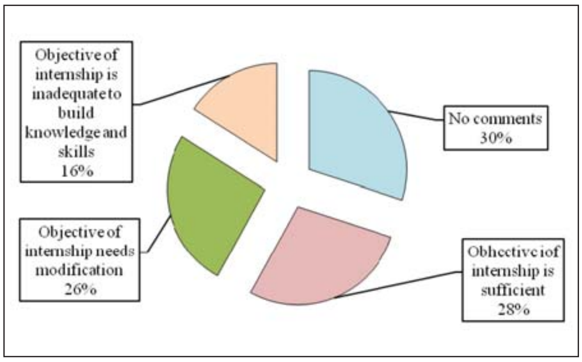


Figure 17. Findings on objectives of internship.

### iii. Findings on the adequacy of the duration of internship training

A high percentage of respondents (46%) opined that duration of internship training is adequate to prepare student for practical application, 26% opined that duration needs change, other 13% opined that training is inadequate to prepare student for practical application, and remaining 15% had not responded.

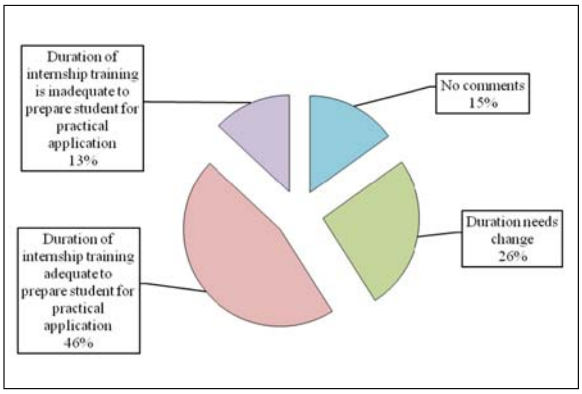


Figure 18. Findings on the adequacy of the duration of internship training.

### iv. Findings on evaluation method of internship term

A high percentage of respondents i.e. 62% (34+28) opined that evaluation methods of internship are inadequate and thus need change, 23% opined that it was adequate, and the remaining 15% had not responded.

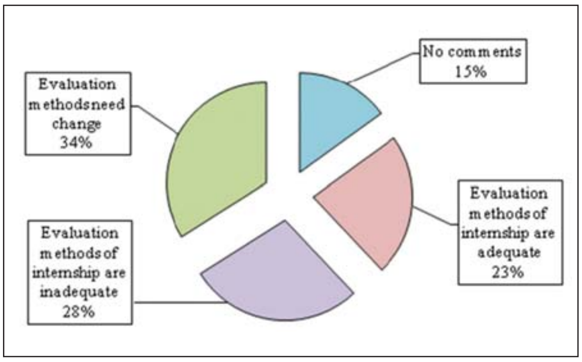


Figure 19. Findings on evaluation method of internship.

### Opinions and suggestions

- **Poor implementation of Internship/ Houseman ship:** The current duration of 1 year internship term is adequate and properly placed but the programme is not implemented properly. The objectives of internship programme are not defined. Still it can be assumed that an intern is supposed to acquire field experience in clinical skill development. If properly implemented, this objective can be achieved during the internship programme. At present there are no evaluation methods of the internship training component. At the end of the Internship programme every internee should be asked to submit a project report on work done during one year, and then only he/ she should be awarded a certificate of completion. It is also advisable to introduce Advance Internship Programme (House job) of 6 or 12 months in specialty fields like Panchakarma, Ksharasutra, Netra Chikitsa etc. where there is a need of extra manpower for the therapies.

## 8. Findings on Ayurvedic practice

Findings on Ayurvedic practice were drawn by taking different issues into consideration like modification of the syllabus to meet the medical needs of people, the practice of integrated medicine officially permitted by some states, practice as per the public demand, relevance of Sanskrit in providing Ayurveda treatment, applied aspects of the Ayurveda systems, strengths, lacunae in the syllabus with reference to current needs, need for regular inclusion of professional bodies in curriculum design and periodical review of the deliverables from the programme.

The following Pie Charts depicts the opinion on different issues of practice -

A high percentage of respondents (78%) suggested for more Ayurvedic practice, and remaining 22 % had not responded.

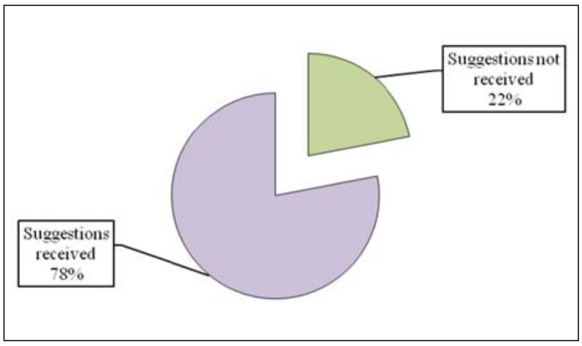


Figure 20. Findings on Ayurveda practice.

## Opinions and suggestions

- **Public Demand: The public demands that Ayurveda practitioners prescribe allopathic medicines particularly in rural areas:** The Ayurveda practitioner has to provide services as per public demand and patients seek quick relief. But responsibility for this situation is because the authorities have neglected and failed to monitor and control the Ayurveda sector. *Prescription of essential medicines approved at places: Some State Governments have allowed Ayurveda practitioners to prescribe essential allopathic drugs.* State governments like Maharashtra, Punjab, Haryana, Assam, Himachal Pradesh, Delhi, etc. allow the ASU practitioner to prescribe drugs and conduct certain interventions using allopathic systems/medication. *Orders have been passed by Government of Maharashtra but the legal status of these orders is still questioned in the background of the Supreme Court judgment in the case of Mukhtiar Chand v/s State of Punjab.* Very recently Hon'ble High Court of Tamil Nadu allowed practitioners of Siddha medicine to prescribe allopathic drugs. After the Court's decision the Health Secretary of Tamil Nadu is reported to have said, "Practitioners of Indian systems of medicine are allowed to prescribe allopathic medicines because they have been trained to do so. States like Maharashtra, Punjab and Haryana have allowed such practice. CCIM recommended it and the High Court okayed it. We took the decision after discussion and debate".
- **Syllabus to be related to public needs:** Modification in the syllabus is essential to equip the Ayurveda practitioner to deal with critical situations when no allopathic practitioner is available. Clinically relevant subjects should be given more weightage for building competencies in practice. It can be done or rather it was being done till the end of decade of seventies. The main issue is the legal status of an Ayurveda practitioner while dealing with such situations. A considered view has to be taken by the authorities in the Government of India in consultation with Medical Council of India to legally facilitate the Ayurveda practitioner to deal with critical situations. Regarding modification of syllabus some restructuring of syllabus will be required, where the allopathic portion will have the status of an independent subject and such subjects will be taught by allopathic experts of the concerned subject.
- **Specialized practice in Ayurveda must be promoted:** No science is complete and lacunae have to be filled by using the knowledge gained from other systems and subject areas. This is true in the management of non-communicable diseases like Hypertension, Diabetes, Arthritis, Cancer etc. where no single pathy is sufficient to manage the diseases on a long term basis. So Ayurveda has to be supplemented with Allopathy for better outcome. Here the specialty practice plays a role. Though CCIM conducts post graduation (MD/MS) in 22 specialties for the last 25 years, no post of Ayurvedic specialist is in existence. This requires serious thought.
- **Integrated practice:** Integration of AYUSH is the stated policy of the National Rural Health Mission (NRHM) as well as the (National Policy on AYUSH, 2002). Ayurveda doctors must be taught Allopathy, must know how to deliver Allopathic medicines, and must know how to manage emergencies.
- **Kerala & Maharashtra models of Healthcare recommended to be adopted on All India basis:** Govt. of Kerala allocates a major portion of health budget to Ayurveda. Ayurveda plays a role in primary healthcare including the prevention of disease and promotion of good health. When Maharashtra state allowed integrated practice, many Allopaths warned that Ayurveda doctors will practice only

Allopathy rather than their own system. But today in Maharashtra there is a very strong tradition of Ayurveda and many international renowned stalwarts of Ayurveda are from Maharashtra. And many renowned and genuine Ayurveda pharmaceutical companies are also from Maharashtra. So this model can be adopted on an All India basis.

- Quackery in Ayurveda: Speaking during the inaugural function of the centenary celebrations of the All India Ayurveda Congress on 7th Oct., 2009 at New Delhi, *President Pratibha Patil spoke of the need to take strict action against quacks practicing Ayurveda and who are bringing a bad name to an age old medicinal system. She said that while people in India have respect for this system of medicine, false practitioners do a lot of damage to the image of Ayurveda and need to be strictly acted against. She therefore urged the practitioners to follow the standardized methods stringently.* As per statistics, India has over six lakh registered Ayurvedic practitioners. However, there are many who pose as 'Vaidyas' and fool the common people giving them wrong medication. This eventually results in the loss of faith in this system of medicine.

- Relevance of Nadi Pariksha & Prakriti assessment: Patients that ingest modern medicine will be under the influence of those drugs. In such conditions manual palpation of pulse examination leads to biased results. The concept of Prakriti (Constitution/Temperament) is beneficial for understanding the patient but is of lesser significance to therapeutics. It has less application in epidemics and general practice but has a significant role in dealing with chronic diseases.

# II(b). Appraisal of the Responses Received on Siddha Curriculum

## 1. Findings on Siddha curriculum evaluation

Respondents were asked about the ASU curriculum in relation to built up of skills, competencies and duties during the programme.

### Opinions and suggestions

- Respondents feel that the programme length is sufficient but also proposed to incorporate new subjects in the curriculum with a practical orientation towards bio-medicine for diagnosis and treatment.
- Certain modifications were considered absolutely necessary. Students needed more exposure in areas like medical emergencies.

## 2. Findings on Siddha admission requirements

Under the section of admission requirements, respondents were asked whether the present 10+2 with Biology background was sufficient or whether any specific subjects needed to be included to fulfil the course objectives.

### Opinions and suggestions

- 10+2 with Biology background fulfils what a person should possess as basic knowledge and background to enter the BSM&S course.
- Basic science including Mathematics gives a more analytical approach in clinical diagnosis and use of instruments as in drug formulation where numerical ability is very important. In depth knowledge of Tamil language is also essential.
- Apart from the above mentioned subjects, Tamil language upto +2 is mandatory. In addition to this, knowledge and exposure to Siddha Medicine, *Saiva Siddantha* can be considered as a desirable requirement.

## 3. Findings on Siddha curriculum content

### i. Findings on sequence of subjects presented in curriculum

### Opinions and suggestions

- The subjects included in the First Professional need to be altered a little. Basic knowledge of identification of medicinal herbs and raw drugs, metal and mineral ores and animal products etc., need to be included in the curriculum. Expertise in Tamil language is also a co-requisite.
- Basic knowledge of Genetics and Immunology can be added since many Siddha drugs have profound activity on immunology. Modern Pharmacology should be incorporated in the syllabus.
- By and large the subjects are sequential but communication both written and verbal is very low among Siddha physicians which put them at great disadvantage to express themselves with clarity. Classical texts are not included in the syllabus. Safety and efficacy of drugs are not dealt with at length in *Gunapadam*.

### ii. Findings on curriculum content in relation to time allocation of each subject with a view building competencies to practice Siddha

### Opinions and suggestions

- Present curriculum is an overloaded one. To reduce the burden on students, it should be revised.
- Though the time allocated for each subject is adequate but emphasis and linkage between five elements-Biological humors-Physical constituents to disease diagnosis and treatment is currently not stressed, therefore ASU orientation is lacking.
- The time allocated to each subject is sufficient in terms of the syllabus. One notable point is

that more stress and time allocation should be given to specific ASU subjects rather than to their counterparts, i.e. General/Scientific/ Allopathic medicines. Examples are medicine preparation and diagnostic methods as per the basics of Siddha.

### iii. Findings on inclusion of necessary learning objectives in relation to individual subject

#### Opinions and suggestions

- The learning objectives are not spelt out clearly and many times students feel that some topics are irrelevant, as textbooks are not updated.
- Clinical subjects are overloaded with modern topics, which may be minimized.
- Phytochemistry, Pharmacognosy, with special reference to hands on training in TLC, HPLC, Liquid chromatography, etc. should be incorporated.
- For subjects like *Sattam Sarntha Maruthuvam* (Medical jurisprudence) two months clinical posting is mentioned as mandatory but students hardly get exposed to medico-legal cases. For *Sool Maruthuvam* (Obstetrisc & Gynacology), no labour case is conducted - not even antenatal care clinics are run by the educational institutions. There is no clinical posting for community health and students have limited exposure to National Programmes.
- For example (i) there are three subjects – *Thotrakirama Araichiyum Maruthuva Varalarum* (Origin & development of Siddha Medicine), *Udal Thathuvam* (Physiology) and *Noi Mudal Nadal* (Pathology) in which subject matters/topics such as 96 *Thathuvams* (96 basic principles) *Pancha Bootha Thathuvam* (Five element theory) and description about *Pathi* (Lord Shiva), *Pasu* (bound soul), *Pasam* (bondage) are found common and mixed. (ii) Verses and explanation about 14 Vegams (natural urges) deal only with symptomatology and so that they should be excluded.

### iv. Findings on curriculum content in relation to examination requirements

#### Opinions and suggestions

- Modern allied science subjects should not exceed 25% of the total curricilum. Research methodology should be incorporated. More importance needs to be given to Siddha treatment approach like lifestyle modification, dietary medicine.
- In the subject *Sirrapu Maruthuvam* courses practical/clinical examination for Yogam should be included.

### v. Findings on balance between theory and practice

#### Opinions and suggestions

- Greater practical application is suggested for the subjects like Vermam, Thokkanam, Yogam and other external therapy techniques such as Attai Vidal
- (Leech application), Ottradum, Vedhu and Pottanam.
- Time allocated for theory is much more than practical. Pratical training should be given more time to build expertise in the students.

## 4. Findings on resources

### i. Findings on availability of resources in relation to tools/ equipment/ practical components

#### Opinions and suggestions

- The tools, equipment and supplies listed to fulfil the practical components of the curriculum are inadequate for programme delivery. More equipment and tools (with innovations) relevant to external therapy techniques should be designed and supplied as per the current student ratio.
- In certain colleges, consumables are not planned and made available to the students. Range of drugs available is limited due to deficiencies in the pharmacy attached to the colleges and associated hospital.

### ii. Findings on resources in relation to the textbooks

#### Opinions and suggestions

- The textbooks need to be updated to suit the present needs, so that they become more relevant considering the present revival of

interest in traditional medicine e.g. *Aruvai Mathuvam, Sirappu Mathuravam.*

- Siddha textbooks have never been updated. The need of the hour is immediate updation of the available textbooks with recent advances. Special emphasis should be given to training in specific subjects during practical sessions without deviation from the basics.

### iii. Findings on resources in relation to the learning resources (i.e. print media, audio-visual materials etc.)

#### Opinions and suggestions

- Learning resources i.e. print media, audio-visual materials etc. badly are needed in Siddha colleges for programme delivery.
- Some respondents also proposed to introduce e-learning and teleconferences. Present teaching module is limited to conventional methods only without any state-of-the-art learning resources.

### iv. Findings on resources in relation to the technical components

#### Opinions and suggestions

- Appropriate technical inputs are not reinforced in instruction. Change is particularly required in the area. All the classrooms are to be equipped with audio-visual facilities including OHP/LCD projectors and access to virtual libraries.
- Number of components (computer system, software and other related items) is inadequate to meet the students requirement.
- MoU with pioneers in the required medical and allied branches and access to all leading online/print journals will certainly help in motivating and improving the knowledge and research skills of the future practitioners of ASU.

## 5. Findings on programme instruction/evaluation methods

### i. Findings on instruction and evaluation methods

#### Opinions and suggestions

- The methods of evaluation are appropriate and there is adequate balance between the theory and practical assessments conducted for each course. Existing procedure may be continued.
- Little change is needed, weightage for records should include minor project reports, assignments etc. Case preparation should be given in internal assessment.
- There should be assignments like minor projects, invited lectures and community health orientation programme including health surveys. Statistics on morbidity and mortality should be included.

### ii. Findings on recommendation for additional methods for evaluation

#### Opinions and suggestions

- Continuous comprehensive evaluation (CCE) method or Grade system should be introduced. Internship with qualified and experienced physicians and non-institutional hospitals should be introduced.
- Seminars, frequent subject interactions with departmental staff, PG scholars and experts of the field should be encouraged. These should be included in the syllabus itself to ensure students involvement.

### iii. Findings on qualifications and experience for potential instructors

#### Opinions and suggestions

- The qualification required for Siddha teachers must be MD (Siddha) and for other related subjects, there should be post graduation in the respective subject.
- From time to time engaging various traditional experts for giving practical training to students is also essential.
- For the subjects Varmam and Thokkanam, collection of original literature from various traditional experts and writing of standard textbooks which would be helpful in evolving common treatment techniques based on experience of various experts.
- Siddha regimen therapy, cleansing therapy, external therapies, and physical manipulation therapies should be made mandatory. Students should be encouraged to interact/ learn from

successful traditional healers as per Guru-Sishya concept in Ayurveda. This has not been implemented in Siddha. In-plant training in drug manufacturing units and analytical testing laboratories during summer vacation should be encouraged.

## 6. Findings on graduation and employment requirements

Respondents stated that research and allied careers, private practice and working as resident doctors in general hospitals were the preferred employment avenues in order of priority.

### Opinions and suggestions

- Requirements for successful completion are sufficient.
- There is general reluctance among examiners to detain a student as it reflects badly on the internal examiner who also happens to be the candidate's teacher. There is general tendency to pass all students. Private college managements pressurize examiners for favourable results.

## 7. Findings on internship term

### i. Findings on appropriate sequence of internship term

Most respondents felt that the internship term was sequenced properly.

### ii. Findings on the adequacy of the duration of internship training

### Opinions and suggestions

- Duration of internship training is adequate.
- There should be training on handling poison cases, emergencies, ante-natal care, labour etc.

### iii. Findings on evaluation method of internship

### Opinions and suggestions

- Most of the respondents feel the evaluation methods are appropriate.
- Some of the respondents suggested that practical skills need to be properly evaluated by the teaching faculty. There is no evaluation of skills except attendence.

## 8. Findings on Siddha practice

### Opinions and suggestions

- Siddha practitioners must be trained adequately in providing First Aid, emergency management to handle the critical and dreadful conditions.
- They may also be authorized to deal with medico-legal cases. The foremost area of focus should be the "Varma technique" because by this technique one can handle many emergency situations successfully.
- Some modification is needed in the syllabus to cater to different medical needs of people in urban and rural areas. Research methodologies are to be given more importance. Medical tours and national health programmes should be a part of the curriculum.

### i. Findings on status of awareness on integrated medicine

### Opinions and suggestions

- The government of Tamil Nadu has recently issued G.O. under Drugs and Cosmetics Act, 1940 which gives legal protection to the practitioners of ASU to prescribe drugs and conduct certain interventions using allopathic system/ medication.

### ii. Findings on ASU practice as per public demand

### Opinions and suggestions

- Intensive research and extensive analysis have to be done to prove the non-toxicity and potential value of emergency medicines mentioned in Siddha systems to handle critical conditions faced by the patients. Drugs delivery research needs to be carried out.

### iii. Findings on knowledge imparted to be able to provide Siddha treatment

### Opinions and suggestions

- Siddha preparations from the original Siddha literature need to be preclinically and clinically evaluated and put into practice.

- Expertise in Tamil language is mandatory since most of the Siddha texts are still in the form of Tamil verses.
- Applied Siddha approaches/techniques are always essential to serve patients better. There are number of therapies that can be incorporated in curriculum which is already discussed like cleansing therapy, Varma, infertility, allergies, arthritis etc.

### iv. Findings on suggestions given on further strengthening of the system

#### Opinions and suggestions

- Inclusion of modern Pharmacology in undergraduate course is essential. It should be taught along with Siddha Gunapadam subjects. This will help the students study Siddha Gunapadam subjects with better understanding and will also promote a research minded approach.
- Siddha treatment is very useful in Endocrine disorders, infectious disease, Cancer, AIDS, burns, Shocks etc. Use of emergency medicine like Kattu, drug less therapy like yoga, Vassiyogam can be incorporated in the syllabus.
- It is also proposed that the essentials of Nano technology, Biotechnology/Bio informatics be included.

# II(c). Appraisal of the Responses Received on Unani Curriculum

## 1. Findings on Unani curriculum evaluation

Under the section of curriculum evaluation respondents were asked whether the ASU curriculum description is related to the skills, competencies and duties to be exhibited by practitioners and in relation to ASU programme length of 4 ½ + 1 year.

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents (53%) opined that curriculum description strongly needed reform. Others i.e. 22% opined that curriculum description did not capture the duties; 21% opined that curriculum captured the duties and remaining 4% did not respond.

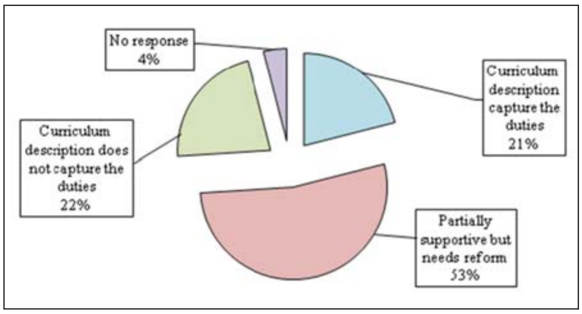


Figure 1. Findings on Unani curriculum evaluation.

### Opinions and suggestions

- All the respondents agreed that the length of the programme was sufficient for the under graduate level.
- The curriculum needed upgradation to incorporate latest findings of research and recent surgical equipments/methods.
- The curriculum should be more clinical and practical.
- The 1st Professional year should have Urdu among the subjects so that the Unani literature can be understood better. Presently, majority of the students come from English medium.
- Knowledge of modern medicine should be added in the curriculum.
- The duration which is allotted for the 3rd Professional of BUMS is too short. The candidate has to gain knowledge in theory as well as practical/clinical aspects. So the duration may be enhanced like MBBS.
- Subjects like clinical research methodology and comprehensive study of Materia Medica should be introduced on scientific lines.
- Some subjects like *Umoor-e-Tabiyya* (Fundamentals of Medicine), *Mantiq* (Logic) and Arabic are too short and deserve to be covered in a six month period. Some subjects are extensive like Anatomy, Physiology, Medicine and Pharmacology. They are required to be remodeled to incorporate the latest advancements.
- Periodic medical tours to apex medical center would be beneficial and play an important role in nourishing the mind of the young graduates.

## 2. Findings on Unani admission requirements

Under the section of admission requirements respondents were asked whether 10+2 with biology background would suffice or any specific subjects to be included at the entrance stage to fulfill the course objectives.

### i. Findings on basic qualification required for admission in Unani

The following Pie Chart depicts the opinion of the respondents -

A high percentage of respondents i.e. 70% (63% + 7%) opined that admission requirements were not satisfactory and thus needed change. A smaller percentage of respondents i.e. 18% felt that admission requirements were satisfactory and another 12% did not respond.

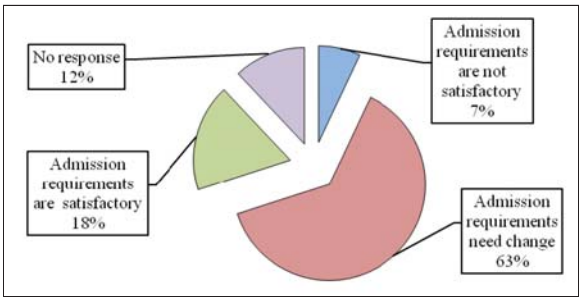


Figure 2. Findings on basic qualification required for admission to Unani.

## ii. Findings on need of special subjects for admission

A high percentage of respondents (53%) felt that specific subjects are essential for pursuing the course, 25% felt that current ongoing 10+2 with Biology background was essential for admission but change was needed, 13% respondents opined that these was unnecessary and another 9% did not respond.

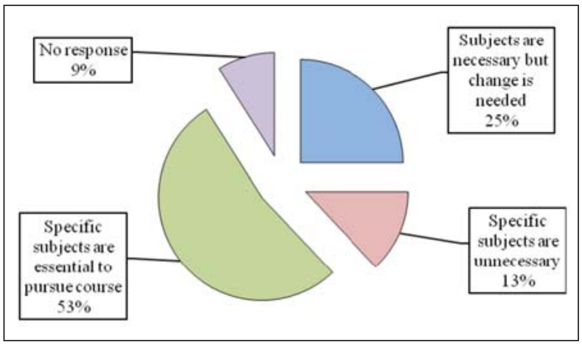


Figure 3. Findings on need of special subjects for admission.

### Opinions and suggestions

- Present admission/ entrance requirements do not ensure availability of the basic knowledge and background about the programme.
- The entrance/admission for BUMS should be separate as the student chooses this option only after comparing the content with the MBBS course.
- In a combined pre-medical entrance both for MBBS, BUMS/BAMS, a candidate writes his preference and naturally the first choice is MBBS. Consequently the students having lower performance in the entrance are selected for BUMS/BAMS.
- The requirements are not sufficient as some of the students are of Hindi or Urdu medium and cannot compete properly. So the medium of Urdu and Hindi should also be included.
- In addition to above subjects Arabic, Urdu and English should be included in the entrance.

## 3. Findings on Unani curriculum content

### i. Findings on sequence of subjects presented in curriculum

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents i.e. 57% (37+20) opined that sequence of training was inadequate and needed modification. 30% percent of the respondents felt that it was adequate and remaining 13% did not respond.

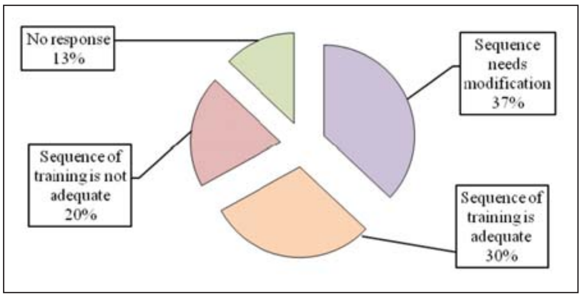


Figure 4. Findings on sequence of subjects presented in curriculum.

### Opinions and suggestions

- Biochemistry should be in the first semester which helps the understanding of pharmacology.
- Unani Materia Medica with scientific advancement needs to be in the curriculum.
- Clinical trials should be part of project work for final BUMS students working under guides/ supervisors.
- Pathology and clinical subjects should be separate and the approach should be more practical.

### ii. Findings on time allocation for each subject in curriculum

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents i.e., 45% opined that time allocation in curriculum was sufficient but 42% suggested for change, a smaller percentage of the respondents (11%) felt that it was sufficient and the remaining 2% did not respond.

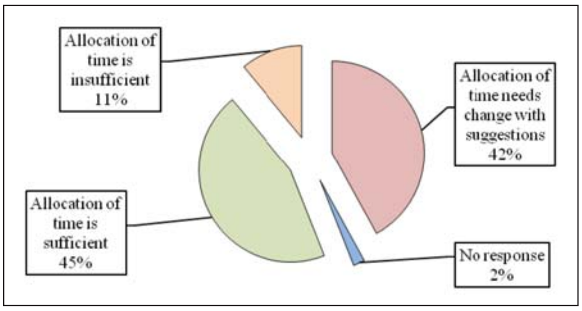


Figure 5. Findings on time allocation for each subject in curriculum.

## Opinions and suggestions

- Time allocated to each subject is adequate but for some subjects like surgery, modern medicine, time should be increased.
- In the third Professional there are 10 papers in which the candidate has to study and complete all subjects along with clinical/practical requirements. So the allocated time is not sufficient to cover all the requirements.
- Clinical subjects should be given more time as these subjects take more time than theory subjects e.g. *Tareekh-e-Tib* (History of Medicine), Arabic, etc. which has been given more time than Anatomy.
- Moalajat (Medicine) should be divided into two Professionals.

### iii. Findings on inclusion of necessary learning objectives in relation to individual subject

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents i.e. 74% (43+31) opined that learning objectives in the curriculum were missing or partially included. A smaller percentage of respondents (21%) felt that learning objectives were included and the remaining 5% did not respond.

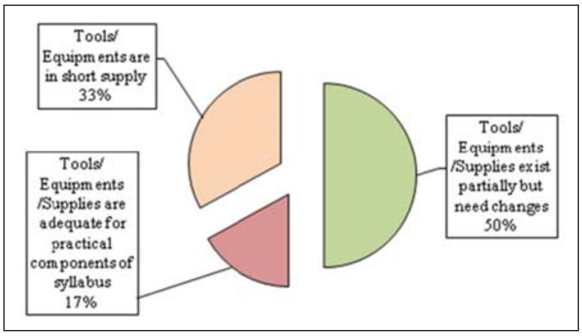


Figure 6. Findings on inclusion of necessary learning objectives in relation to individual subject.

## Opinions and suggestions

- The subjects for example *Saririyat* (Bed side clinic) learning methods of perception of *Nabiz* (Pulse) should be demonstrated to the student.
- In the subjects of Community Medicine there must be one rural unit of 5-10 villages for coverage through Health camps for propagation and practical demonstration measures like *Dalak* (massage), *Riyazat* (Exercise) and vaccination methods etc. It will encourage and popularize the ASU systems also.
- Field work should include introduction of skills to practice. Social & community medicine and *Illmul Advia* (Unani Pharmacology) respectively need emphasis.
- Endocrine system, Nervous system and knowledge on Vitamins should be added in the Physiology syllabus of I$^{st}$ BUMS. Emphasis should be given to applied Physiology.
- Every subject should have question answer session i.e. direct teacher and student interaction session for better coverage and understanding of all segments of the syllabus.
- Tareekh-e-Tib (History of medicine) should be taught in each subject.
- In ancient times Unani Medicine was taught after completing its philosophy because, most of the theories in Unani Medicine are based on philosophies and hypothesis. Nowadays, everything is accepted on the basis of research and experiment. So subjects like Arabic, *Mantiq wa Falsafa* (Logic & Philosophy) *wa ilm Al Hayath* should be excluded and some subjects like Statistics, Microbiology and Toxicology etc. may be included.

| | Inclusion | Exclusion |
|---|---|---|
| Ist Prof. | Biochemistry, Embryology | Arabic, *Mantiq wa Falsafa* (Logic & Philosophy) *Al Umoor Al Tabiya* (Fundamentals of Medicine) |
| IInd Prof. | Microbiology | *Majarrabak Atiba-e-Qadeem* (Classical Experiments) |
| IIIrd Prof. | Human Genetics | *Usool-e-Nuskha Naveesi Mamoolat-e-Tib* (Principles of Prescription writing) |

### iv. Findings on curriculum content in relation to examination requirements

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents (43%) opined that examination requirement needed change, 25% felt that examination requirements were removed from expected competencies and skills, 24% opined that examination requirements were related to expected competencies and skills, and the remaining 8% did not respond.

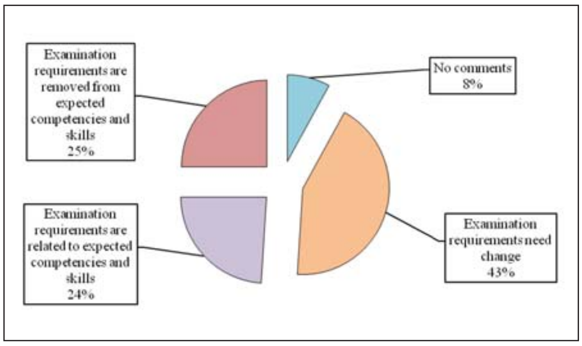


Figure 7. Findings on curriculum content in relation to examination requirements.

### Opinions and suggestions

- Examination requirements should be revised in all the areas in national level by CCIM, because in some colleges like Government Unani Medical College (GUMC) (Chennai, Allahabad and Bengaluru) Government Nizamiah Tibbi College (GNTC) (Hyderabad) etc., they are not as competent and equipped as what is expected.
- The present theory and practical evaluation needs reform. Actually, in practical assessment/ examination not more than 20 students are examined in a day. The practical examination should be extended for 2 to 3 days according to total strength of the students, and whole segments of a subject should be assessed.
- The subject *Tareekh-e-Tib* should be excluded from examinations as it does not have any use in practice.
- Viva-voce examination is required to be revamped as it is not uniform which creates bias or it should be recorded through audio-visual devices to have fair play. Students should be examined by exploring the whole syllabus and weightage should be given to assignments.
- Yearly system of examination should be implemented as it would give sufficient time for each subject.

### v. Findings on balance between theory and practice

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents i.e. 62% (37+25) opined that balance between theory and practice was lopsided or exists partially. Other respondents (34%) felt that balance existed between theory and practice, and remaining 4% did not respond.

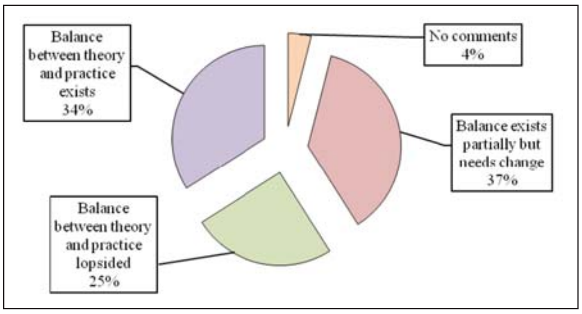


Figure 8. Findings on balance between theory and practice.

### Opinions and suggestions

- Much more IPD and OPD practice should be prescribed to enable the students to know the strength of ASU subjects.
- There is no proper balance in Unani Medical College between the theory and number of practicals. From the beginning, Unani Colleges need dissection hall for anatomy and clinical laboratory for Chemistry and Biology. This is not available uniformly.
- A theory class should be preplanned first giving the justification for the topic, mode of presentation, supportive methods to make the class fruitful and interesting.
- The art of medicine is to be exhibited rather than the science to build up confidence among young doctors.
- The tools and equipment supplied for the practical component of the curriculum should be modernized.

## 4. Findings on resources

### i. Findings on availability of resources in relation to tools/ equipment/ practical components

The following Pie chart depicts the opinion of the respondents

A high percentage of the respondents i.e. 78% (45+33) felt that institutions were short of resources supply or partial supply. Other respondents (20%) felt that there was adequate supply of resources for practical component, and remaining 2% not responded.

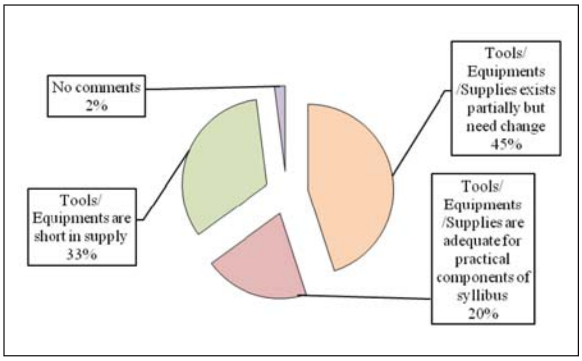


Figure 9. Findings on availability of resources in relation to tools/equipments/practical components.

## Opinions and suggestions

- Tools and equipment should be up-to-date and hands on experience was needed. The practical components do not support the learning objectives of the programme.
- Audio/video classes, on line dissection, surgeries and provision of basic diagnostic tools and equipment and assessment upto the standard of modern medicine is the need of the hour.
- As some practicals like Gynecology & Obstetrics are difficult to demonstrate, the e-simulations are required for better training. Also there is a need to maintain uniform standards in all colleges. The colleges hardly get any cadaver for practical exams.

## ii. Findings on resources in relation to the textbooks

The following pie chart depicts the opinion of the respondents

A high percentage of the respondents (43%) opined that prescribed textbooks are insufficient, 28 % felt that books required amplification and updation. Other respondents (28 %) felt that prescribed texts were sufficient, and remaining 1% did not respond.

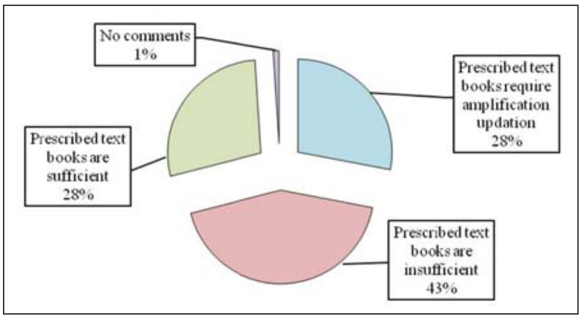


Figure 10. Findings on resources in relation to text books.

## Opinions and suggestions

- The text books listed with the curriculum are not updated, some of them are really very preliminary and written long back. This is a grey area of ASU. The libraries of the colleges should have classical text books in abundace.
- The Government of India should open a Bureau of printing and encourage more and more authors to write/share their views, so that the students get the benefit and can gain latest knowledge and experience.

## iii. Findings on resources in relation to the learning resources (i.e. print media, audio-visual materials etc.)

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents (47%) felt that Audio visual learning resources existed but needed enhancement, 27% opined that AV resources were inadequate, 22% have opined that AV resources were adequate, and another 3% did not respond.

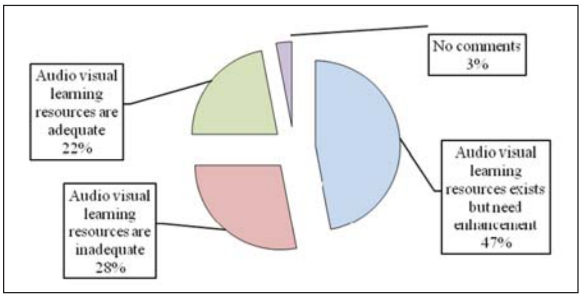


Figure 11. Findings on resources in relation to the learning resources (i.e. print media, audio-visual materials, etc.)

## Opinions and suggestions

- Improvement is required in relation to the learning resources. Students should be

engaged by using more and more teaching tools. Lectures in the classroom should be through power point and use of internet with accompanying pictures would help the students to understand better.

- Quiz programmes may be added for adequate learning.
- Basic computer courses should be added in the first BUMS Professional. Audio visual material like computers, projectors, internet facility rooms are not available in most of Unani colleges.
- The teachers should be trained compulsorily in this area and they should be overseeing the students. A majority of Unani teachers are computer illiterate.
- Learning resources are very much necessary for programme delivery, but unfortunately there is a lack of learning resources in all the Unani medical colleges with a very few exceptions.

### iv. Findings on technical resources

The following Pie chart depicts the opinion of the respondents-

A high percentage of the respondents (43%) felt that computer support existed but needed enhancement, 22% opined that computer support was inadequate, others 29% opined that computer support was adequate, and remaining 6% did not respond.

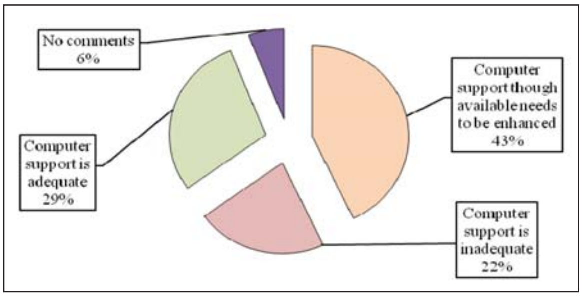


Figure 12. Findings on technical resources.

### Opinions and suggestions

- Appropriate technical inputs are not yet provided except in very few colleges.
- Classical textbooks of Unani needed to be scanned and thrown open on internet.
- The instructions are not durably applied with the technological usage. Clinical software and programme modules for each subject should be specially designed.
- Free interest loan for the students to purchase computer system should be provided by Government.

### v. Findings on specialized resources to strengthen the delivery of the programme

The following Pie chart depicts the opinion of the respondents -

A high percentage of the respondents (27%) felt that specialized resources existed but needed augmentation, 23% opined that specialized resources were inadequate for programme delivery, another 34% opined that specialized resources were adequate, and the remaining 16% did not respond.

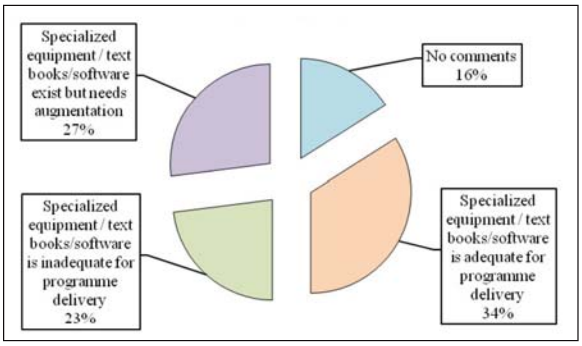


Figure 13. Findings on specialized resources to strengthen the delivery of the programme.

### Opinions and suggestions

- New teaching methods may be adopted like e-learning through latest electronic gadgets, training in MRI, CT scan, and DNA tests should be incorporated in the syllabus.
- There are many resources which would strengthen delivery of the programme. Classical text books of ISM which are becoming scarce and other software inputs are needed for strengthening the delivery of the curriculum and for making it durable. This will enable Unani Hakeems to practice the system with confidence.

## 5. Findings on programme instruction/evaluation methods

### i. Findings on instruction and evaluation methods

The following pie chart depicts the opinion of the respondents -

A high percentage of respondents (46%) felt that evaluation methods are balanced and adequate, 39% felt that evaluation needed change, 13% opined that methods were not balanced and inadequate, and remaining 2% did not respond.

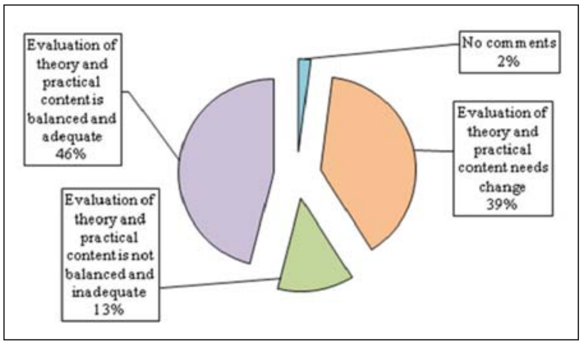


Figure 14. Findings on specialized resources to strengthen the delivery of the programme.

### Opinions and suggestions

- Different methods of evaluation are appropriate, but more seminars on specific disease should be conducted at regular intervals.
- During the course the theory and practical/ clinical assessment is poorly managed and not as consistent or accurate as modern medicine.
- Time duration for practical should be more than theory. Viva voce questions may be asked to students at all levels. Some levels of questions should be asked from every student so as to ensure equality.

### ii. Findings on recommendations for additional evaluation

### Opinions and suggestions

- There should be no partiality/influence in assigning staff. Students should be asked to give proper presentations on current diseases so as to improve their compentencies.
- There should be academic assessment of the institution by the senior teachers through intense and value based interactions with students and teachers. The academic report should be discussed with the teachers and students for improvement.
- Students' involvement and competency in group discussions, debates, medical camps, and surveys in epidemic areas should be recognized.
- Small projects included field work should be assigned to each student.

### iii. Findings on qualifications and experience for potential instructors

The following pie chart depicts the opinion of the respondents -

A high percentage of the respondents (62%) made suggestions for potential instructors, and the remaining 38% did not respond.

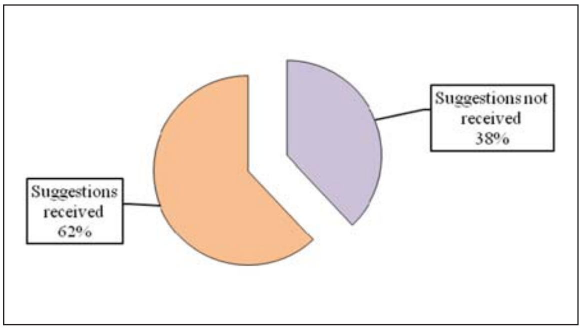


Figure 15. Findings on qualification and experience for potential instructors.

### Opinions and suggestions

- The majority recommended that the qualification requirements for potential instructors should be at least postgraduate, i.e. M.Sc. for allied sciences, MD for Unani, MD/ MS for allopathic subjects.
- In final BUMS some courses should be added to teach research methodology i.e. statistics (already in MBBS).
- Some courses require a different combination of specialized training, experience and clinical exposure also i.e. Sanat-e-Dawasazi (Unani Pharamacy), Crude drugs and formulation of Unani compound drugs, Ilaj-bit-Tadbeer (Regimental therapy) and Sanat-e-Attar (Compound & Dispensing).

## 6. Findings on graduation and employment requirements

The following pie chart depicts the opinion of the respondents -

A high percentage of the respondents (66%) felt that graduate requirements were adequate, 23% opined that requirements needed change and 7% opined that methods were inadequate, and the remaining 4% did not respond.

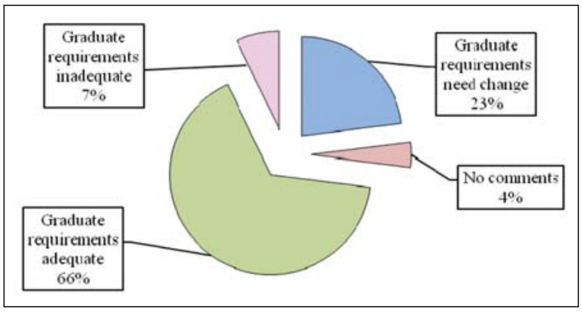


Figure 16. Findings on graduation and employment requirements.

The following Bar chart depicts the three most important types of job options available to graduates of ASU medicines.

A high percentage of the respondents (63%) opted for private practice, 41% opted for working as resident doctors in general hospitals and the remaining 43% opted for other openings.

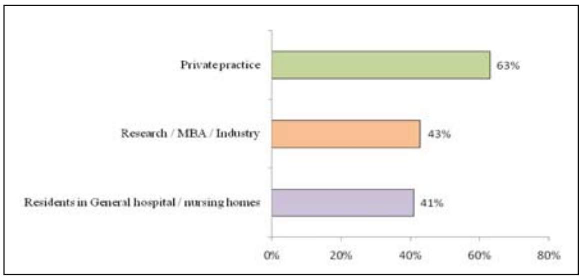


Figure 17. Findings on employment options.

## 7. Findings on internship term

### i. Findings on appropriate sequence of internship term

The following pie chart depicts the opinion on the internship term -

A high percentage of the respondents (37%) felt that internship was properly sequenced, 35% suggested changes while 15% opined that it was not properly sequenced and remaining 13% did not respond.

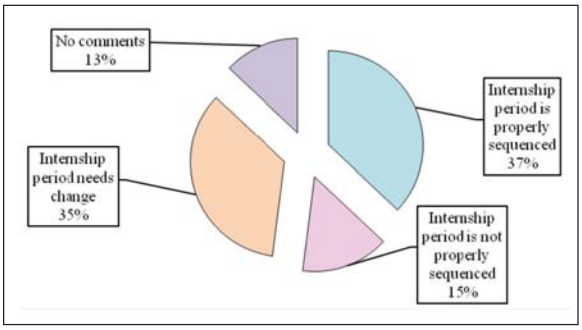


Figure 18. Findings on appropriate sequence of internship term.

### Opinions and suggestions

- The internship of 12 months should cover all the major departments of different specialties. At least two months posting must be given in PHCs, which includes Mother & Child Health, disease surveillance and prevalence of diseases, Family Planning Clinics, district level outpatient departments and dispensaries. Specialty hospital posting like psychiatric, leprosy hospitals and hospitals catering to epidemics and endemic problems would be helpful.
- Six months internship should be in modern medicine and six months in Unani Medicine.

### ii. Findings on objectives of the internship

The following pie chart depicts the opinion on objectives of the internship term –

A high percentage of the respondents i.e. 58% (39 +19 %) felt that objectives of internship were inadequate to build knowledge and thus needed modification, 27% opined that internship was clear and sufficient, and the remaining 15% did not respond.

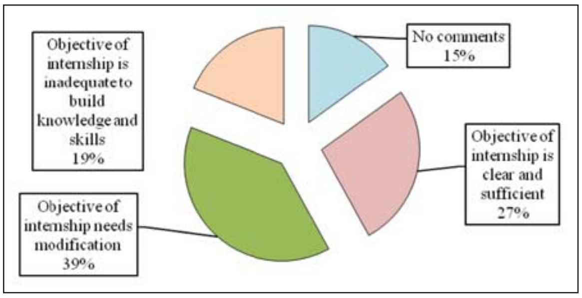


Figure 19. Findings on objectives of internship.

### Opinions and suggestions

- The objectives of the internship are clear. However 80% time should be utilized in the

OPD and IPD of Unani clinical subjects and 20% time in the training in surgery and casualty.

- In Karnataka, the interns of ASU are posted to all major and specialty hospitals apart from AYUSH hospitals, only to provide exposure in contemporary fields as well as to arm them, so they are assets for the health centre. It is proposed to make this essential for all colleges.
- The internship time is not sufficient because of short term of posting in major departments, like general medicine, surgery, casualty and intensive care unit. The duration should be increased.

### iii. Findings on the adequacy of the duration of internship training

The following pie chart depicts the opinion on adequacy of internship training-

A high percentage of the respondents (59%) opined that duration of internship training was adequate to prepare student for practical application, 17% opined that duration needed change, other 9% opined that training was inadequate to prepare students for practice and the remaining 15% did not respond.

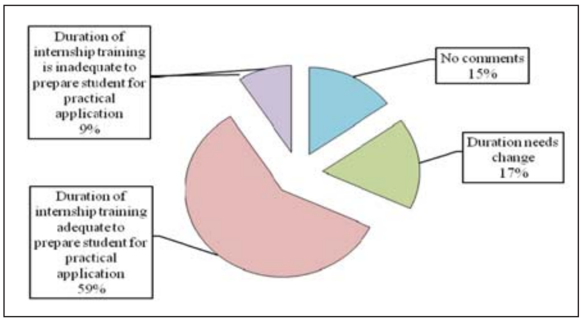


Figure 20. Findings on the adequacy of the duration of internship training.

### Opinions and suggestions

- The duration of internship should be five months for Moal-e-jat, five Months for modern side and two months for Institute of Public Health. Approximately 35% respondents suggested this.
- The duration of internship is said to be adequate but the duration of the posting should be increased in the major departments by reinforcing practical application of the theoretical knowledge.

### iv. Findings on evaluation method of internship term

The following pie chart depicts the opinion on evaluation method of internship-

A high percentage of the respondents (63%) (46%+17%) opined that evaluation methods of internship were inadequate and thus needed change, 15% opined that these were adequate, and remaining 22% did not respond.

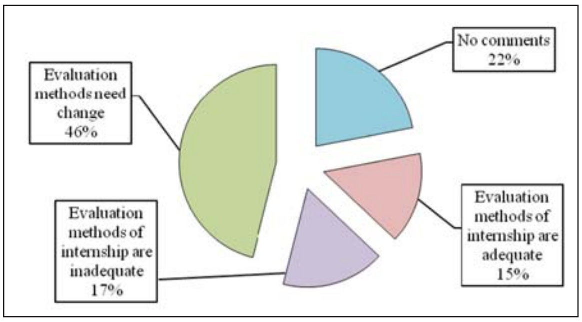


Figure 21. Findings on evaluation method of internship term.

### Opinions and suggestions

- The evaluation methods for internship are neither available nor established so far. Only the attendance in various disciplines is considered to be sufficient. Medical camps and grading in terms of efficiency among the students should be developed.
- Internship evaluation method should be stringent. Per day working hours should be increased. Candidates may be posted for night duties and evaluation should be done in the form of projects.

## 8. Findings on Unani practice

The following pie chart depicts the opinion on different issues of practice –

A high percentage of the respondents (76%) made suggestions for Unani practice, and remaining 24% did not respond.

### Opinions and suggestions

- Seventy-six percent did not agree that the Unani practitioner hardly use their ASU knowledge and skills as a practitioner as they have to provide services as per public demand and choice which calls for quick relief.

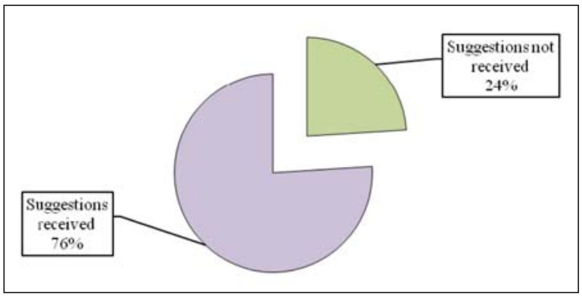


Figure 22. Findings on Unani practice.

- A good percentage of the respondents said that Unani practitioners do not have full fledged knowledge for treating the disease using Unani medicines.
- A lot of modification can be done by providing training for handling critical situations in obstetrics and training for prescribing essential medicine and surgery.
- Besides adding allopathic medicine in the syllabus, Unani practitioners need modification in their own pathy by introducing emergency medicine.
- Frequent CME programmes should be conducted to update the knowledge of practitioners in the field of emergencies.
- In some States (like Tamil Nadu) there was a huge difference between allopathic and ASU practitioners. Finally the High Court of Tamil Nadu permitted the Siddha practitioners to prescribe allopathic medicines. So allopathic medicine should be included in syllabus as essential medicine to deal with emergencies. In Tamil Nadu, BUMS graduates are directly admitted in M.Sc. Anatomy, Biochemistry and these professionals are serving in allopathic medical colleges.
- Government of Karnataka has included BUMS in integrated schedule of Karnataka Ayurveda Practitioners Board. Maharashtra extended such facilities for ASU graduates.
- The prescribed syllabus of Unani needs modification and rectification. Urdu helps to meet the problem because ancient Unani literature is written in Urdu and without it one never gets knowledge of basic theories of the Unani system.
- Urdu terminology should be replaced by modern terminology as all the investigation reports are in modern terminology. Urdu language helps only in communication and dealing with patients.
- Biochemistry is the subject that is very important. It provides basic diagnostic points to determine disease and should be added in the syllabus. Pharmacy should be well designed to better understand ASU medicines.
- Along with curriculum redesigning, proper personnel management with accountability, updating of skills and efficiency and transparency is badly required.

## 9. Findings on periodic review of the programme

A high percentage of respondents (96%) responses recommended for periodic review of the programme and remaining 4 % had not responded.

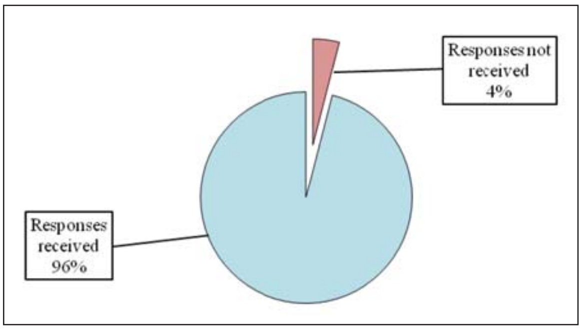


Figure 23. Findings on periodic review of the programme.

- Almost all respondents i.e. 96% are in the favour that a periodic review of the academic programme is needed to maintain relevance and promote excellence.
- CCIM education teams review periodically but it takes years in reaching to implementation level. It is proposed that every three years, there must be periodic review and then speedy implementation within educational institute.

## Specific additional comments on Unani curriculum

- A separate Board or Council for Unani should be established in all States and union territory.
- Emergency care/ training must be given.
- Syllabus must be updated after every five years. Basic concepts (knowledge) of other systems like Ayurveda/Siddha/ Homoeopathy should be taught by respective faculties.

- Weekly seminars may be organized by renowned Hakims/ allopathic doctors. Seminar hall and Auditorium facilities should be available.
- Research work of CCRUM should be periodically informed to all students.
- Herbal gardens should be upgraded.
- Every Unani college should have its own library where specific Unani and related allopathic books should be provided.
- Some useful regimental therapy procedures like cupping, venesection, Dalak (massage) and Hammam(bath) should be modernized and included in the curriculum.
- The new development and findings in the field if Unani medicine are not referred in theory and practical components of UG and & PG programmes. Unfortunately, the teachers do not consult and refer to latest findings in the classroom lectures. A high level coordination committee should be formed to examine and to include the latest findings and research output in the courses which will be helpful in building the confidence of graduates of Unani Medicine.
- Since the CCRUM or CCRAS have nationwide network of regional and Central Research Institute, the Council should organize the CME (Continuing Medical Education) programmes of practitioners of ASU systems. This will be very helpful to remind the latest findings and achievements in the field of respective disciplines particularly the treatment through ASU systems in general diseases as well as in recent challenging diseases like chikungunya, viral encephalitis and in number of lifestyle diseases.
- Surgery is an integral part of any medical subject; hence more and more emphasis may be given on surgery.
- Classical literature of Unani Medicine, which is available only in Persian or Arabic, should be translated into a common language i.e. English or Urdu and made available in college libraries.
- Students coming from other medium i.e. Hindi or English should be allowed to write the Urdu paper in English, which would promote other people to participate in the Unani or Ayurveda system of medicine.

# Discussion and Recommendations

## Focus of the Recommendations

In this section the discussion focuses on the scope of professional education imparted to the ASU student to equip him to become a health professional of relevance; first as a practitioner but also capable of pursuing higher education, leading to careers in teaching and research. The quality of education is of critical importance and the orientation of the curriculum and syllabus plays a substantial part in determining how the student will approach his professional future.

It was clarified in the introductory part of this Report that it does not dwell on the infrastructure of ASU colleges because that is being constantly reviewed at the government level. But the curriculum and syllabus require discussion based upon interviews and responses received to the questionnaires.

Currently there are two sets of curricula and syllabi in force for ASU students. On the website of the Central Council of Indian Medicine (CCIM) the new curriculum for UG, PG and Postgraduate Diplomas are displayed which were to be introduced from the academic session 2010-11. The existing curriculum will however continue according to the individual decision of each affiliating university in respect of students that have joined the courses before the changes were notified. The discussion is therefore related to both new and "pre-existing" curricula.

## 1. Recommendations regarding orientation of the curriculum

The existing curriculum and the new one and do not indicate the orientation of the courses in the way professional courses stipulate. In professional education it is necessary to refer to this explicitly because clarity is needed for both the teacher and the student.

A. The curricula (existing and new) should state at the outset what the student would essentially learn in terms of theoretical knowledge and practical skills to be able to render unique service by way of preventive, promotive and curative care through the Indian systems of medicine. At present the curriculum whether in its existing incarnation or the new one does not spell out these capabilities at all.

B. Nowhere is there a mention of the competencies and skills based on ASU knowledge and practical training that the curriculum seeks to provide.

C. For ASU systems to gain credibility and legitimacy in the eyes of the student and even the public, the study of modern medicine should not occupy a position of so much primacy. The orientation of the ASU curriculum towards modern medicine should be linked to the role that Government policy assigns to the ASU graduate. The precise role expected to be played both in the public health arena and in hospital settings needs to be stated unambiguously. Such a statement would provide a context and a purpose which would stand as a backdrop for teaching individual subjects.

## 2. Recommendations regarding essential components of the curriculum

Every subject in the curriculum whether of Indian medicine or modern medicine should have the following features:

(i) The **goal** sought to be served by teaching the subject should be stated clearly.

(ii) A statement of the **learning objectives** should include:

- What part is to be taught simply by way of background and for improving overall knowledge?
- What skills will be taught which the student can use on completion of the course?
- A summary of how each subject integrates with earlier subjects which have been taught.
- The teaching and learning methodology to be followed in the theory and practical classes.

- The method of internal assessment and the marks given for each segment of the syllabus related to that particular subject.
- Sample question papers and responses to guide the student.
- The objectives of the internship programme and its duration and design.

## 3. Recommendations regarding modern medicine/allopathic practice

### Discussion:

Before going into the recommendations the arguments for and against the incorporation of modern medicine teaching to enable its practice by ASU doctors need to be summed up.

### Arguments in favour of teaching and practising modern medicine as put forward by ASU educationists and practitioners:

- Modern science has developed phenomenally and no ASU practitioner would be fair to his patients if he remained ignorant about what is available through modern diagnostics and pathological investigations. Diagnostic and laboratory equipment is the outcome of medical engineering and the results have to be available for the use of humanity at large and not to be used only when recommended by modern medicine practitioners.
- Several ASU educationists and practitioners said that knowledge is not the preserve of any particular profession or "pathy" and the inclusion of allopathic subjects in the curriculum is for the statutory council, CCIM to decide.
- The ASU practitioner must know how to taper allopathic medicines which have been in use when a patient desires to move to ASU medicine. Without this knowledge the ASU physician may be handicapped and that may harm the patient. Even when ASU treatment is used as an adjunct or an adjuvant, the ASU practitioner must know how modern medicine drugs and ASU drugs might interact with each other. That requires an understanding of how modern medication works.
- The ASU practitioner has to be in a position to discuss the approach with the allopathic treating doctor particularly as new state-of-the-art multi-specialty hospitals like Medanta (Gurgaon) and Moolchand (Delhi) have adopted an integrated approach to medical treatment. The patient would feel much more confident if the doctors talked to each other and treatment through both systems was available under one roof.
- As far as surgery is concerned, it was argued that in the *Sushruta Samhita,* more than 60 percent of the diseases were related to Ophthalmology, ENT and the treatment of anorectal disorders. [In the case of Ksarasutra knowledge of anaesthesiology is needed for the comfort and well-being of the patient.] The inclusion of surgical techniques was therefore justified on the ground that surgery was already a part of the *Samhitas* and exclusion of surgical techniques would reduce the content of Ayurveda teaching substantially.
- In a recent judgement of the Tamil Nadu High Court, the court has permitted the use of modern drugs by ASU practitioners on the ground that the state has approved the same; also modern medicine has been included by the CCIM which is competent to register medical practitioners that undergo the course as prescribed. The Judgement is available at http://judis.nic.in/judis_chennai/qrydisp.aspx?filename=26978 (accessed on 7 July 2011).

### Arguments against practice of modern medicine by ASU doctors as stated by some ASU educationists:

- The first argument against inclusion of modern medicine is the Supreme Court order in the case of Mukhtiar Singh versus the State of Punjab where the apex court gave a ruling that a practitioner of one system of medicine has to adhere to his own system and that ruling has been quoted whenever this debate surfaces. The judgment is available at www.ccimindia.org/downloads/6%20SC%20Judgment%2008.10.pdf (accessed on 7 July 2011) but the order is quoted selectively by protagonists and antagonists and a universal understanding of the judgment has remained elusive. In a nutshell, the common view expressed against the practice of modern medicine mostly by modern medicine practitioners include the following arguments:

- ASU practitioners prescribe modern drugs under provisions of the Drugs and Cosmetics Act, 1940 - an Act which was made for the regulation of the production and sale of drugs and not practice of medicine. The training and exposure of ASU students to modern medicine is deficient. The teaching imparted by non-allopathic teachers having neither specialisation nor up-to-date knowledge is not acceptable. The absence of clinical material in ASU hospitals is a major handicap. The duration of exposure to modern medicine is underprovided and there can be no short-cut to systematic training in these subjects before patients are exposed to medication and treatment from underqualified, inexperienced ASU practitioners.

### Ground realities about the allopathy practice by ASU doctors:

- An overview of the functioning of ASU practitioners in a representative group of cities, towns, district headquarters and talukas gave the following picture:

  These practitioners are offering services which predominantly comprise of modern medicine diagnosis and treatment in most cities in North India and even in Delhi. In Maharashtra and Karnataka practitioners use both the systems side by side. [Some practitioners belong to the old integrated course which was phased out; but most are graduates and postgraduates from the ASU medical colleges]. There is nothing surreptitious about the practice of moden medicine by ASU graduates. Many of them were found dispensing allopathic drugs, giving injections, administering IV fluids, prescribing antibiotics and in some cases even conducting appendicitis and hernia surgeries as well as caesarean operations. In urban areas they can be seen working in general hospitals and nursing homes in the private sector, as hospital registrars or assisting senior physicians. When the PI asked knowledgeable persons about how these doctors gained proficiency in the absence of clinical exposure generally unavailable in the ASU hospitals the response was that many students paid out of pocket and worked as assistants to allopathic doctors to gain knowledge and experience.

- State governments like Maharashtra, Punjab, Haryana, Assam, Himachal Pradesh and Tamil Nadu permit the ASU practitioner to prescribe modern medicine drugs and conduct procedures and interventions using allopathic medication. Explicit orders have been passed by the Governments permitting this. The CCIM grants registration to medical practitioners and no one has prevented their practising modern medicine. The Government of India, Ministry of Health and Family Welfare, Department of AYUSH has made a forceful case for mainstreaming practitioners of the Indian systems of medicine in the delivery of health care services in policy statements.

- The National Rural Health Mission (NRHM) has supported the contract appointment of ASU practitioners and they are being posted the in Primary Health Centres (PHCs). Their salaries are paid out of NRHM budgets, and NRHM is a flagship national programme. In fact in some States, ASU graduates are being posted as the in charge of PHCs, responsible for the implementation of all national programmes. At such places, the Auxiliary Nurse Midwives (ANMS) that operate at the sub-centre level report to the primary health centre and their function whether it is antenatal care, reproductive and child health or immunisation is supervised by the primary health centre headed at times by an ASU practitioner. In some cases specific training has been given to the ASU appointees so that they can administer the programmes as well as the medication.

## 4. Recommendations regarding modern medicine practice by ASU practitioners

The following recommendations are made keeping in mind ground realities and in the public interest:

- An ASU practitioner survey and a beneficiary needs assessment should be conducted in a representative group of cities, towns, district headquarters and talukas. The aim should be to determine the extent to which ASU practitioners are using modern medicine procedures and medication and how far they are being used for these services by the general public. Observations need to be inventorised and even if the study is given to an organisation

like the NSSO or the International Institute of Population Sciences (IIPS) it should be done with the involvement of the State Health Secretaries and Directors of ISM /AYUSH. Such a survey would enable a uniform view to be formed on additional training needed to be given to equip ASU practitioners to undertake modern medicine practice; also to list those aspects of modern medical practice that need to be proscribed.

- The content of the CCIM syllabus and the teaching imparted (keeping in mind that practically all modern medicine subjects are being taught by non-allopathic teachers and the availability of clinical material in the ASU hospitals is relatively small) needs to be juxtaposed with what a medical graduate learns in an average college of the allopathic system.

- In the undergraduate ASU curriculum, the knowledge and practical skills used in the in-patient wards and the Emergency and Casualty Departments of hospitals have been listed. These include paracentesis, venipuncture, administration of IV fluids, catheterisation, nebulisation, incubation, insertion of Ryles tube, aspiration of fluid in the joints, and lumbar puncture, among others, which according to the Ayurveda curriculum have to be "managed". These are skills that have to be acquired. There should be no disparity in the duration of hands on training if the ASU graduate is to be permitted to conduct these procedures. Reference may be made to the modern medicine component of the Ayurveda curriculum at **Annexure-I**.[14]

- In the case of acute symptoms or a medical emergency including poisoning, snake or dog bites, respiratory distress and cardiac emergencies, in the absence of an allopathic practitioner the public will continue to access the first doctor available. The patient and his family, except the highly educated class, cannot distinguish between an MBBS and an ASU physician. The reality is that in many districts in North India, particularly in UP, there are hardly any general practitioners of modern medicine available. It is well-known that ASU practitioners are being accessed by most of the population. Even in the outskirts of Delhi, many private practitioners are from the ASU background and people access them routinely. Therefore the ASU practitioners must be trained and permitted to use at least 10-12 emergency drugs as a life saving measure. This was the considered view of several allopathic specialists that the PI consulted but the note of caution was that the training should be uniform and the list should be specific to identified conditions only.

- There is a need for a stated Government policy on how far the paucity of allopathic doctors warrants that ASU practitioners diagnose and treat, using modern medicine, therapeutics and interventions. This requires the duration of training and exposure to be prescribed explicitly along with the qualifications of the faculty that should teach those subjects. Allopathic subjects should be taught by the concerned modern medicine faculty. In no case should Sanskrit / Urdu and Tamil versions and nomenclatures be used to justify a correlation with ASU medicine. This is confusing and misleading both for ASU students and teachers as this nomenclature gives the impression that the root of the subject lies in ASU which is a subterfuge.

- Exposure to adequate clinical material is a pre-requisite to be able to practice and unless training linkages with district and private hospitals have been established (where patient load is high), there should be no compromise on giving the same hands on experience as prescribed for modern medicine students. Theoretical teaching of modern medicine by ASU teachers unaccompanied by teaching aids leave alone human material should not be accepted.

## 5. Recommendations regarding involvement of professional bodies in curriculum design

Presently the academic board set up by the respective councils prepares the curricula and these are placed before the executive committee of the Council who are from a non-academic background. Today there is no interaction between members of the Medical Council of India (MCI), National Board of Examinations (NBE) and the Central Councils for Ayurveda, Siddha and Unani

14. Such an Annexure containing modern medicine subjects for Siddha and Unani curriculum has not been included.

Medicine. Much more would be gained if the government sets the broad agenda of what kind of health manpower is needed and the extent to which the inclusion of modern medicine is a public necessity. This would enable the ASU student to become skilled to play a complementary and supplementary role in a way that helps the community. But curriculum design should be undertaken by a professional body of medical teachers of both the systems to the extent that the knowledge of modern medicine requires to be imparted to be of service to the public, due to shortage of allopathic doctors. A separate Central organization should be formed on the lines of the proposed National Council for Human Resources in Health (NCHRH) for AYUSH educational planning should be brought under that umbrella with its own set of experts. There is every need for an umbrella organisation to look into aspects like manpower planning, curriculum design, accreditation of institutions/colleges and regulation. That is not described at length here as the model prepared by Department of Health is available to the Government which has been debated extensively. These responsibilities need to be withdrawn from CCIM which has not attempted to establish professional institutional linkages with expert bodies without which the modern medicine content of the syllabus cannot be imparted properly to ASU students. Incorporating the views of selected modern medicine doctors is by no means the way a professional curriculum should be drawn up. This was the repeated lament of almost all those who responded to the questionnaire sent out by the PI. However, to be fair, almost all the Health Secretaries and Directors of AYUSH in the states favoured that the ASU graduate should be equipped to practice modern medicine.

## 6. Recommendations regarding training in medical and public health network systems

The ASU practitioner should be made conversant with the system for making referrals to the most appropriate modern medical facility both in the government and private sector. ASU students should be taught how to contact the city hospitals, officers of the Directorate of Health Services and the district and municipal hospitals. They should be trained to maintain the locations /addresses, telephone numbers and other details of multi-speciality Government and private hospitals and specialists. The curriculum should provide for giving this orientation and the State Government policy should require exposure sessions to be given by the Health Department machinery to ASU doctors to equip them to make useful referrals.

## 7. Recommendations regarding sequencing of training and tie up for teaching

The curriculum content is a mixture of methodologies which seems to lead to unnecessary repetition of subject content. This should be avoided. The Ayurvedic and modern medicine contents have to be in separate and the faculties of ASU and modern medicine should teach the subjects independent of one another. There is a shortage of teachers even in the allopathic medical colleges. Therefore the terms of engagement and remuneration would need to be worked out bilaterally between the Deans /Principals of the ASU and allopathic teaching colleges so that there is no let- up. The State Medical Education and AYUSH Secretaries are the same in states like Maharashtra, Gujarat, Kerala and Punjab to name but a few. A joint meeting called by the Departments of Health and AYUSH at the Centre would flag the need for each state to find local solutions to the shortage of allopathic teachers as well as the shortage of clinical material to impart hands on training to AYUSH students. This needs proactive management and cannot be left to the college Principals to sort out.

## 8. Recommendations regarding bed strength and clinical material

During discussions, the PI was told that the Benaras Hindu University (BHU) has a tradition of cross referrals between the two systems of medicine i.e. modern medicine and Ayurveda chiefly because there is an allopathic hospital which runs as a part of the teaching institution. To some extent this happens also in institutions like the Aligarh Muslim University's Tibbiya College Hospital, the hospital attached to the Tilak Mahavidyalaya and the Majeedia Hospital in Jamia Hamdard. This is by no means the universal pattern.

But the absence of sufficient patient load is a source of universal concern. By simply adding to the bed strength of ASU hospitals it will not automatically bring in patients to fill the beds. In several hospitals visited by the PI, it was evident that the beds were either not filled or most of the patients were admitted for Panchakarma procedures related to

muscular skeletal problems, neurological problems or mental disorders. In surgery the admissions were mostly to do with ophthalmology, ENT and ano-rectal diseases. The full range of clinical material to be able to diagnose patients and to watch the progress of treatment in a wide range of conditions was simply not available even in flagship ASU hospitals. Only occasionally when the students went to attached hospitals of modern medicine did they get exposure to the full range of medical problems. A formal structure and arrangement needs to be worked out to make their exposure a reality which will require high level policy intervention. If Government policy supports that ASU graduates perform some degree of modern medicine practice then it would be necessary to increase the period of hospital internship in a modern hospital to at least an additional six months; alternately the ASU theoretical portion would need to be curtailed.

Unless the paucity of modern medicine doctors to impart education in modern medicine is confronted at a policy level, and the needs of patient care are placed above all else, it will not be possible to decide what the ASU graduate should be equipped to handle from modern medicine. The Department of Health has already acknowledged the role of ASU practitioners by including them to perform PHC related functions. A list of procedures, interventions and medicines that the ASU student can use for public benefit needs to be drawn up and introduced in a uniform way. But the list has to be specific and oriented towards the management of public health programmes common diseases and dealing with emergencies in order to stabilize the patient before making a referral. The ASU student should be divested of the belief that he is both an ASU doctor and a modern medicine doctor as that can produce harmful outcomes. He should be regarded primarily as an ASU physician, specially trained to perform identified modern medical and public health functions which should be stated clearly. The inventory should indicate modern drugs that can be prescribed by the ASU physician. Likewise, the invasive modern medicine procedures that ASU practitioners are permitted to undertake, should be specified. The need for also drawing up a negative list of drugs, procedures and interventions that may not be undertaken may be considered, particularly as the curriculum does not distinguish between knowledge and practical competencies.

## 9. Recommendations regarding teaching of Sanskrit and Urdu

While knowledge of Sanskrit and Urdu are definitely useful but absence of knowledge of these two languages should not become an insurmountable hurdle. Instead of acquainting the student with the grammar of the language, textbooks should be specially designed to contain paragraphs, phrases, terminologies and verses drawn from the classics. In that way the grammar portion can be reduced substantially and there could be greater emphasis on learning the translations, which is important for appreciating the original texts. It would be desirable to have Sanskrit and Urdu teachers handling this portion of the syllabus. If this were to be done, students from the SAARC countries and even from the West could be allowed to take admission into the AU courses with a three-month language orientation which would be the best way of promoting global knowledge about the systems.

## 10. Recommendations regarding teaching of modern medicine subjects for the sake of acquiring knowledge

The principles of biochemistry, microbiology, pharmacology, forensic medicine and toxicology need to be introduced in the curriculum as independent subjects without any Ayurvedic nomenclature. The subjects should be taught only by experts of these subjects and not by ASU faculty. This has been stated by several respondents and is the basis of a research critique by Dr. Kishor Patwardhan[15], BHU.

## 11. Recommendations regarding paramedical and non-teaching staff in ASU institutions

The practice of ASU necessarily requires the assistance of ASU pharmacists, Panchakarma and Ksharasutra technicians, laboratory technicians and assistants to manage the pharmacies as well as the anatomy and physiology departments and herbariums. Nursing staff and ward boys and librarians are also needed. These are basic requirements for the efficient functioning of ASU departments. The need for supporting staff should be recognized and normative requirements need to be spelt out. At the time of inspection this aspect should receive due attention.

15. Patwardhan, Kishor, Sangeeta Gehlot, Girish Singh and HCS Rathore. "Global challenges of graduate level Ayurvedic education: A survey." *Int J Ayurveda Res* [serial online] 2010 [cited 2010 Nov 21]; 1: 49-54.

## 12. Recommendations regarding books and journals

The shortage of good ASU books as well as textbooks was repeatedly highlighted. Apparently national and state libraries do not purchase ASU books as the subjects are neither treated as a part of science nor as a part of the humanities. This deters writers from bringing out new books. In the 12th plan multiple contributing authors need to be persuaded to take up the design of new textbooks and the publication of new textbooks in regional languages should be encouraged. It should be compulsory for ASU colleges to purchase new books which are published. Department of AYUSH should consider making a plan provision to encourage the writing as well as the purchase of textbooks by ASU colleges through an agency like National Council of Education Research and Training (NCERT), National Book Trust (NBT) or the Raja Ram Mohan Roy Library, which has a mandate to supply books to district libraries. Department of AYUSH could fund the most enthusiastic among such agencies to commission writers and translators and also to facilitate the sale of the textbooks. The Department could give an annual grant to the Government colleges for purchase of the textbooks and could extend this to also include a grant for putting all books on line with learning resources like step-by-step demonstration of ASU skills.

## 13. Recommendations regarding teachers' qualifications and aptitude

Qualifications and experience are not necessarily the only ways of judging the capabilities of potential instructors. There were constant complaints that teachers do not update themselves and do not have the capacity to hold the attention of the class. Communication skills are extremely important and one way to judge that would be to have mock presentations videographed to enable independent selection of candidates aspiring to become lecturers and Assistant Professors/Professors. This suggestion needs to be given to the Secretaries in charge of the ISM so that they take it up with the Universities for Health Sciences or other affiliating Universities to exercise scrutiny so that the ability to teach is given more importance at the time of recruitment. Equally, research work, authorship of books, presentations and credits earned for attending CMEs, reorientation workshops, and the use of new teaching methodologies should be incentivized. Student evaluation should also be introduced in a limited way because several post graduates and final year students felt that they had to put up with out of date teachers who had made no effort to engage the attention of the class. All these factors need to be taken into account at the time of recruitment and promotion, wherever public funds are being used.

## 14. Recommendations regarding encouragement of ASU in Central universities

There should be a dialogue with the Central universities to create ASU departments particularly with a view to supporting interdisciplinary research ultimately leading to better clinical outcomes. Only the Department of AYUSH is in a position to take this up as it is unlikely that individual colleges and departments would be able to do so. Without multidisciplinary involvement held in a collaborative manner, ASU will not be able to create a wider interest or generate respect for what the systems can offer.

## 15. Recommendations regarding specialization in ASU

Now that postgraduate diplomas are being introduced by CCIM, there should also be a move to create positions of specialists in ASU hospitals – starting with the areas of well established strength, confined to ASU treatment and devoid of modern medicine drugs and therapies except to taper off medication.

## 16. Recommendations regarding exposure to good ASU private practice

It is important that the ASU undergraduates are exposed to good clinics and clinical practice conducted by competent private practitioners very early in their course of study, even in the very first year. It was repeatedly stated that students with a 10+2 science background get frustrated in the very first year as they have to learn about what was written 5000 years ago; this does not appeal to the student who has opted for ASU as a fallback from his first preference which was modern medicine. Therefore to inculcate an interest, the young student should be exposed to the actual treatment of patients and the running of successful ASU clinics in the private sector so that he sees the opportunities that lie ahead through successful practice of the Indian systems he has chosen to study.

## 17. Recommendations regarding visits to apex medical centres

It would be beneficial to also take young students to see identified ASU hospitals on a regional basis to observe best practices and to get inspired by teachers who have earned a reputation from their work, within the first year, to sustain interest.

## 18. Recommendations regarding computer literacy

It was found that many among the older generation of teachers do not use the computer. The younger generation is well versed in the use of computers but even so, some are at it distinct disadvantage over others. Computer laboratories should form an essential part of the college infrastructure and an exposure to the capabilities of different kinds of software would help the students design better projects.

## 19. Recommendations regarding videos and step-by-step lessons to be available on the Internet

A special website needs to be created so that the entire course curriculum is available in textual and audio-visual manner on a special website created for ASU teaching and learning. Typical questions and answers should be available on the website for all the major subjects so that students can learn about the more complex aspects of the syllabus on their own. Programme modules for each subject should be designed and put up on the website. The Department of AYUSH can commission private practitioners who are already running good websites to help create these modules in an imaginative way under the overall guidance of a set of web designers who are engaged on contract.

## 20. Recommendations regarding inter-disciplinary interaction at ASU colleges and departments

It is clear that the three systems of traditional Indian medicine have several skills and drugs which are specific only to those systems. It would be useful to arrange monthly seminars where students from Ayurveda, Unani (and Siddha if feasible) take up a topic from one system and discuss the approaches under each systems along with case studies. Historically, both the systems Ayurveda and Unani collaborated both in the Mughal days and even under the British rule; they learnt from each other and benefited. The present tendency to segregate and subdivide the systems does not work in favour of patients and a common meeting ground should be promoted as a matter of policy.

## 21. Recommendations regarding a bridge course of three years for both modern doctors and ASU doctors in the interest of patient care

Several doctors of modern medicine would be interested in learning about ASU medicine and this should be facilitated to the extent possible. The best way to do this would be to design a special diploma/degree courses of three years duration to be undertaken after MBBS or two years after post graduation in which the modern medicine doctor can be taught about the ASU systems and particularly the management of chronic diseases like Parkinson's, rheumatoid arthritis, autoimmune diseases, infertility and cirrhosis of the liver. Equally, it would be in the public interest if modern medicine doctors get a chance to study ASU treatment of new public health problems like chickanguniya so that the culture of cross referrals increases if the patient is inclined.

## 22. Recommendations regarding ASU degree eligibility for different courses and new openings

The ASU curriculum needs to be designed in a way that the products of an ASU education can also move laterally to join courses in different areas of agriculture, veterinary science, human behaviour and allied sciences, nutrition and dietetics, botany, ethnobotany, ecology and environmental sciences to name only a few. This would need to be planned well in advance in collaboration with university departments. This is not something that CCIM is equipped to do and a centrally appointed committee with representation from the protagonists of ASU together with the relevant departments of Jawaharlal Nehru University, Benares Hindu University, Aligarh Muslim University and Jamia Hamdard need to come together to discuss how the outreach of ASU can be widened. The focus should not be the career interests of ASU students

and practitioners but rather how the knowledge can be used to bring new paradigms to existing disciplines.

## 23. General recommendation on funding ASU colleges

During the 12th plan the Department of AYUSH should make a provision for several inputs without which the educational foundation on which ASU rests will remain weak. The government colleges would need to be assisted in a way that students are able to acquire sufficient competencies and skills to be of real benefit to society. Apart from infrastructural requirements about which this report has not made any recommendation, adequate provision ought to be made to upgrade the soft facilities in the government ASU colleges. Some of these are listed below:

- Department of AYUSH could consider funding a division of UGC or the Universities of Health Sciences to cater exclusively to ASU colleges. All funds could be routed through a newly formed AYUSH division of UGC or the State Health Science Universities so that there is uniformity as well as a check on proper utilization of funds. A beginning can be made with the Universities of Health Sciences in the states of Maharashtra and Karnataka which have the maximum colleges. The Government run colleges could be given grants which can be utilised through approved agencies and for specified items.

- Funds should be set aside for the establishment of an educational portal or a Virtual Resource Centre including its updating and maintenance. This portal should cover the practical aspects of the ASU curriculum particularly where medical or manipulative procedures have to be observed step-by-step over the Internet. This can be projectized and given as a turnkey job either to C-DAC, NIC, EDUSTAT or IGNOU as they have adequate server space. A University of Health Sciences which sets up an independent division for AYUSH can be entrusted with the preparation of software. An advisory committee could be set up with well-known educationalists and researchers from leading institutions/universities like IPGT&RA, GAU, BHU, NIA, Jaipur and AVS, Kottaikal.

- Department of AYUSH should make a provision for commissioning textbooks from a cross-section of authors and also provide funds for the purchase of textbooks to be procured from a central source. A provision for all printed material to be in downloadable form should also be made. Existing material should be scanned and put up as PDF documents.

- The terms under which allopathic teachers can be incentivized to deliver lectures and conduct practicals in ASU colleges or alternately teach ASU students in modern medicine hospitals would need to be worked out and funds given to the modern medicine colleges to defray expenses utilizing the services of their teachers/ laboratories/learning resources. This could be done as a one-time exercise for two to three years until the ASU colleges build up their own infrastructure. It will not be possible for the Department of AYUSH to do the handholding for so many individual colleges. This would be possible only if it were to be made a part of Government policy. The costs to be incurred on a consultancy should be provided for in the 12th Plan so that there is an incentive with the allopathic colleges to undertake this collaboration. Similarly, funds should be set aside for permitting the ASU students to gain knowledge in the Departments of pharmacology, microbiology, biochemistry, forensic science, etc. but by paying for the utilization of the resources in a structured way, there will be less resistance and greater acceptability for the idea, particularly if it is a part of Government policy. The involvement of the Medical Education and ISM/AYUSH Secretaries at the State level is essential if this idea is to take off. In no case should this be an effort to convert the ASU student into a clone of the modern medicine graduate - merely a means to provide comparable education and training in areas identified by the Government for the management of medical and health needs of the public.

# Annexure-I

## Modern Medicine Contents included in the Syllabus of Ayurvedacharya (BAMS) Course with Ayurvedic Nomenclature

| 1st Professional | 2nd Professional | 3rd Professional |
|---|---|---|
| 1.1 Sanskrit | 2.1 Charak Samhita (Purvardha) | 3.1 Charak Samhita (Uttarardha) |
| 1.2 Padarth Vigyan | 2.2 Swasthavritta | 3.2 Kayachikitsa |
| 1.3 Ayurved ka Itihas | 2.3 Dravyaguna Vigyan | 3.3 Shalakya |
| 1.4 Ashtang Hridayam (Sutrasthan) | 2.4 Rasashastra & Bhaishajya Kalpana | 3.4 Shalya |
| 1.5 Rachana Sharir | 2.5 Roga Vigyan Evum Vikriti Vigyan | 3.5 Prasuti Tantra Evum Striroga |
| 1.6 Kriya Sharir | 2.6 Agad Tantra, Vyavhar Ayurved Evum Vidhi Vaidyak | 3.6 Kaumarbhritya |
| | | 3.7 Panchkarma |

### 1.5 Rachana Sharir

- Preservation and Dissection Method of dead body
- Fertilization, cell division, principles of Hereditary, sex Determination, month wise development of Fetus, factors effecting development and growth of embryo, formation of placenta, formation of umbilical cord, Development of various systems. Developmental Anomalies and their causes
- Detailed description of each bone - Ossification of bones, applied anatomy of each bone.
- Definition of joints, Types, structure of each joint, various, Specific description of temporo-mandibular and joints of extremities vertebral joints, Sutural Joints, Ligaments, movements of Joints and Clinical importance of the joints.
- Importance of Cardiovascular system, heart, Description of Arteries and capillary, Accessory veins and Principal veins.
- Introduction and study of Lymphatic channels, Lymphatic glands, thoracic duct, lacteals and Courses of Lymphatic Ducts.
- Introduction and detail Structure, shape, size and types and their Importance of muscles – their attachments and origin, insertion, actions nerve supply and its clinical application.
- Thoracic cavity organs, organs of abdominal cavity, Description of digestive organs and accessory digestive organs. Organs of Respiratory system, Organs of Urinary system, Description of male and female reproductive organs and their details.
- Description of the structure of Exocrine, and Endocrine glands.
- Definition and structural pattern and details study of Pericardiurm, Pleura, Meninges, Peritoneum).
- Definition of Skin, its structure, types
- Introduction, Definition, classification and importance of Brain:
  1. Cerebrum,
  2. Cerebellum,
  3. Mid brain,
  4. Pons,
  5. Medulla oblongata, Spinal cord, Cranial Nerves and spinal Nerves, Peripheral nervous system. Description of Autonomic nervous system, Sympathetic and parasympathetic nervous system and nerve plexuses.
- Surface marking and Radiological Anatomy
- Sensory organs: Description of the Eye, Ear, Nose, tongue, Skin

### 1.6 Kriya Sharir

- Basic principles of biochemistry. Study of basic componants of food. Biochemical structure, properties, classification of proteins, fats and carbohydrates. Metabolism of proteins, fats and carbohydrates. Vitamins – sources, daily requirement, functions, manifestations of hypo and hyper-vitaminosis. Biochemical study of enzymes.
- Definition and mechanisms of maintenance of Homeostasis. Cell Physiology. Membrane Physiology. Resting membrane potential and action potential.
- Physiology of Respiratory system: Functional anatomy of respiratorysystem. Definition of ventilation. Mechanism of respiration. Exchangeand transportation of gases. Neural and chemical control of respiration.Spirometry and lung function tests. Artificial respiration.
- Physiology of Cardio-Vascular system: Functional anatomy of cardiovascular system. Properties of cardiac muscles. Cardiac cycle. Heart sounds. Regulation of cardiac output and venous return. Physiological basis of ECG. Heart-rate and its regulation. Arterial pulse. Systemic arterial blood pressure and its control. Regional circulations. Physiology of lymphatic circulation.
- Modern view of somato-types, biological personality and psychological traits of an individual.
- Functional anatomy of gastro-intestinal tract. Descriptive physiology of digestion and absorption in gastro-intestinal tract. Mechanism of secretion and composition of different digestive juices.
- Haemopoetic system – composition, functions of blood and blood cells, Haemopoiesis-(stages and development of RBCs, WBCs and platelets); Introduction to bone marrow: composition and functions of bone marrow. Structure and functions of haemoglobin, mechanism of blood clotting, anticoagulants, study of platelets, physiological basis of blood groups, principles of blood transfusion, plasma proteins- synthesis and functions. Applied physiology: anaemia, jaundice. Basics of Immunity – Classification and Mechanisms. Hypersensitivity. Physiological basis of immunization.
- Muscle physiology – comparative study of physiology of skeletal muscles, cardiac muscles and smooth muscles. Physiology of muscle contraction.
- Physiology of adipose tissue, lipo proteins like VLDL, LDL and HDL.
- Calcium metabolism: hormonal control of calcium metabolism. Functions of vitamin D, parathormone and calcitonin. Bone and teeth.
- Structure and functions of skin, sweat glands and sebaceous glands.
- Physiological study of male and female reproductive systems. Spermatogenesis and oogenesis. Hormonal regulation of menstrual cycle.
- Physiology of pregnancy and lactation.
- General introduction to nervous system – neurons, mechanism of propagation of nerve impulse, physiological study of CNS, PNS, ANS; physiological study of sensory and motor functions of nervous system. Functions of different parts of brain – Cerebral cortex, Hypothalamus, Limbic system, Midbrain, Pons, Medulla and Cerebellum. Physiology of special senses. Intelligence, Memory, Learning and Motivation. Physiology of sleep and dreams. Physiology of speech and articulation; EEG. Physiology of temperature regulation.
- Endocrine glands – General introduction to endocrine system, classification and characteristics of hormones, physiological study of all endocrine glands and their hormones.
- Urinary tract physiology – Functional anatomy of urinary tract. Functions of kidneys. Mechanism of formation of urine. Control of micturition. Renal function tests.

B) Modern practical

1. Use and care of compound microscope
2. Types, uses and care of balances
3. Collection of blood sample – prick, venepuncture method and bulbs, apparatus for collection
4. Preparation of blood film and staining,
5. Hemoglobinometry

6. Microscopic examination of blood
    a. RBC count,
    b. WBC count,
    c. Differential leucocyte count
7. Packed cell volume (PCV) demonstration,
8. ESR demonstration,
9. Bleeding time,
10. Clotting time,
11. Blood grouping and Rh typing,
12. Examination of Cardio-Vascular system
    a. Pulse examination,
    b. Arterial blood pressure measurement
    c. Examination of heart sounds by stethoscope,
    d. ECG demonstration
13. Examination of Respiratory system -
    a. Respiratory rate,
    b. Air entry with the stethoscope,
    c. Spirometry
14. Examination of CNS – Reflexes
15. Urine examination – Collection of urine, physical examination, chemical examination and microscopic examination.

    Test for normal constituents of urine

    Following chemical examinations for abnormal constituents are expected
    a. Albumin test,
    b. Sugar test,
    c. Acetone bodies,
    d. Bile salts and pigment,
    e. Occult blood
16. Stool examination – Collection of stool, physical examination, chemical examination and microscopic examination
17. Examination of semen,
18. Measurement of body temperature
19. Study of instruments related to physiology practicals.

## 2.2 Swasthavritta

**Epidemiology**

1. Concept of Epidemiology
2. Concept of disease
3. Concept of causation
4. Epidemiological triad
5. Natural history of disease
6. Risk factors
7. Concept of control
8. Concept of prevention
9. Modes of intervention
10. Incidence and prevalence
11. Dynamics of Disease transmission
12. Modes of transmission
13. Susceptible host
14. Host defenses
15. Immunizing Agents
16. Disease prevention and control
17. Disinfection
18. Epidemiology of Communicable Diseases
    a) Measles
    b) Diphtheria
    c) Pertussis
    d) Mumps
    e) Tuberculosis
    f) SARS
    g) Influenza
    h) Pneumonia
    i) Cholera
    j) Polio
    k) Viral Hepatitis
    l) Typhoid
    m) Leptospirosis
    n) Dengue fever
    o) Chikungunya
    p) Malaria
    q) Filariasis
    r) Leprosy
    s) Rabies
    t) Tetanus
    u) Emerging and re-emerging diseases
19. Kuprasangaja vyadhis (STDs) -
    a) AIDS
    b) Syphilis

c) Gonorrhoea
d) Chanchroid

20. Ayurvedic paribhasha of sankramika rogas

21. Non - Communicable disease epidemiology -

a) Diabetes
b) Obesity
c) Hypertension
d) Coronary heart Disease,
e) Rheumatic Heart disease
f) Cancer

## Community Health Care

I. Prathamika Swasthya Samrakshana (Primary Health Care)

1. Definition,
2. Principles,
3. Elements
4. Structure – at Village level, Sub centre level, PHC level, CHC level, Hospitals, Health Insurance, Private agencies, AYUSH, Voluntary health agencies in India and N.G.Os.
5. Role of Ayurveda in Primary Health Care in India

II. Parivara Kalyana Karyakrama (Family Welfare Programmes)

1. Demography,
2. Demographic Cycle,
3. Life Expectancy
4. Family Planning,
5. Methods of Family Planning.

III. Rashtriya Karyakrama (National Programmes)

1. Tuberculosis (RNTCP),
2. Leprosy (NLEP),
3. AIDS (NACP)
4. Blindness (NPCB),
5. Polio (PPI),
6. Diabetes (NDCP),
7. Cancer (NCCP)
8. National Rural Health Mission (NRHM)
9. National Anti Malaria Programme,
10. National Filaria Control Programme
11. UIP (Universal Immunisation Programme),
12. RCH (Reproductive and Child Health programme)
13. National water supply and sanitation programme
14. Minimum needs programme,
15. All emerging National health programmes.

IV. Matru-Shishu Kalyana Karyakrama (Mother and Child Welfare Programme)

1. Ante natal care,
2. Post natal care,
3. Neo natal care,
4. Child health problems,
5. Indicators of MCH care

V. Preventive Geriatrics

VI. International Health

1. World Health Organization – Objectives, Structure and function of WHO
3. Alma – Ata declaration,
4. National Health Policy and Importance of Ayurveda in it.
5. United Nations agencies,
6. Health work of bilateral agencies

VII. Swasthya Prashasana (Health Systems in India)

1. Central level,
2. State level,
3. District level,
4. AYUSH

VIII. Health Statistics

1. Definition of statistics/health statistics/vital statistics,
2. Sources and uses of health statistics.
3. Data Collection, classification and Presentation,
4. Mean,
5. Median,
6. Mode,
7. Health survey
8. Mortality rates, Morbidity rates and Fertility rates

## 2.3 Dravyagun Vigyan

5. Definition & scope of Pharmacology, Principles of general Pharmacology.

Brief knowledge of the following

Anaesthetics, CNS depressants, Sedatives, Hypnotics, Tranquilisers, Antipyretics, Analgesics, Antiepileptics, Antihypertensive, Antianginal, Antiplatelet, Hypolipidaemic, Haemopoetic, Coagulants, Bronchodialators, Aerosols/Inhalants, Expectorants, Digestants, Carminatives, Antacids,

Antiulcer, Laxatives, Antidiarrhoeals, Antiemetic, Hepatoprotective, Diuretic, Antidiuretic, Lithotriptic, Antiinflammatory, Hormonal therapy, Antiobesity, Antidiabetic, Antithyroids, Oxytocic. Galactagogues, Contraceptives, Styptics, Antihistamins, Antimicrobial, Antibiotics, Antimalarial, Amoebicidal, Antifilarial, Anthelmentic, Antifungal, Vitamins, Minerals, Water imbalance and IV fluids, Vaccines, antivenom, antirabbies serum, Local anti septics, drugs in ophthalmic practice, Anti cancer drugs and immunomodulators etc.

### 2.5 Roga Vigyan Evum Vikriti Vigyan

- Basic knowledge of Hereditary, Congenital, Acquired, Multifactorial, Traumatic and Environmental disorders.
- Introduction to ICD Classification of Diseases – of WHO and DSM classification.
- Introduction to pathology and its sub-divisions. Introduction to Cell Injury and Cellular adaptations
- Definition and brief description of inflammation – Healing/repair.
- Definition and brief description of oedema – shock – haemorrhage.
- Thrombosis and embolism. Ischemia and Infarction
- Immunity – types – different types of immune responses in the body – Basic knowledge of auto immune diseases, Acquired immune deficiency disease and hypersensitivity
- Nomenclature and classification of tumors - difference between benign and malignant tumors.
- Introduction to Nutritional disorders – disorders of macro and micro nutrients.
- Introduction to infectious diseases
- Introduction and classification of micro-organisms such as virus-bacteria- fungus.
- Importance and methods of history taking, clinical examination and knowledge of Ancillary investigations.
- Basic Knowledge of tools – ECG, USG, and Radio imaging.
- Basic Knowledge of Laboratory investigations pertaining to Metabolic and Endocrine disorders.
- General mechanism of Fever. Introduction to the Aetiopathogenesis of Malaria, Typhoid, Dengue fever, influenza and Chikungunya.
- Introduction to Anaemia & its Classification, Rheumatic fever, Rheumatoid Arthritis, Angina, Ischaemic Heart Disease, Hypertension, Myocardial Infarction
- Introduction to Hepatomegaly, Spleenomegaly, Leukaemia, Thalessemia, Sickle cell anaemia.
- Introduction to Urticaria,Psoriasis, Eczema, Pemphigus
- Introduction to Obesity and Diabetes Mellitus.
- Introduction to Osteo- Arthritis, Osteomyelitis, Osteoporosis.
- Introduction to Parkinson's disease, Stroke, lumbago – sciatica syndrome, Bell's palsy, Ankylosing Spondylitis
- Introduction to male and female infertility.
- Introduction to the aetiopathogenesis of Pneumonia, Pleural effusion, Bronchitis, Bronchiectasis, Bronchial Asthma.
- Introduction to Peptic ulcer, Irritable Bowel Syndrome, Diarrhea, Dysentry, Constipation, Inflammatory Bowel Syndrome.
- Introduction to water and electrolyte imbalance disorders
- Introduction to Urinary Tract Infection, Urolithiasis, Nephropathies and Renal failure.
- Introduction to Depression, Anxiety neurosis, Phobia, Personality disorders.
- Introduction to Leprosy , Tuberculosis and AIDS.
- Introduction of Filariasis and classification of common parasites.

Practical 100 Marks

Laboratory Practicals

1. Fundamental Principles of Laboratory Tests
    - Introduction to laboratory, Sterilization, glass wares, solutions reagents and safety procedures.

2. Hematology
   - Hb% estimation, Blood cells counting - WBC, RBC, platelets
   - Hematocrit/Packed cell volume (PCV), Erythrocyte indices - MCV, MCH, MCHC
   - Peripheral blood smear, staining technique and differential leucocyte count.
   - Peripheral blood film examination in Anemia, Leukemia, Malaria, Filaria (Demonstration)
   - ESR., Introduction to rapid diagnostics of hematology
   - Screening test for bleeding disorders - bleeding time (BT), Clotting time (CT), Prothrombin time (PT), Blood grouping - ABO system, Rh typing (Rhesus system)
3. Urine Examination -Physical Examination - Volume, Reaction ($P^H$) & Specific Gravity
   - Chemical Examination for - Proteins, Glucose, Phosphate, Ketone, Bile salts, Bile pigment
   - Microscopic Examination
4. Stool Examination – Microscopic examination of ova & cyst etc, Occult Blood Test
5. Sputum Examination – Physical, Chemical and Microscopic Examination of the sputum, Sample collection and Demonstration of AFB.
6. Semen examination – Semen examination & Demonstration of semen, sperms.
7. Biochemical Examination – (Demonstration) - Serum Glucose, Serum Bilirubin, Serum urea, Lipid profile, Serum Creatinine.
8. Demonstration of different staining techniques in microbiology.
9. Demonstration of Sero-immunological Investigations: Ra and Widal.
10. Demonstration of Aspiration techniques.
11. Laboratory record – maintenance of observation Diary and laboratory record book.

Bedside Practicals (Clinical Methods)

1. Introduction and demonstration of clinical methods (General and Systemic Examinations).
2. Demonstration of instruments used for clinical examination
3. Practical records of clinical examination of at least 20 long cases in I.P.D.
4. Demonstration of ECG, USG and Radio imaging techniques.

### 2.6 Agadatantra, Vyavaharayurved Evum Vidhivaidyak

- Poisoning with contact poisons
- Contamination of air, water, soil etc. their contemporary significance. Effects of chemical and Nuclear warfare
- Signs and symptoms of poisons of plant kingdom and their management. Signs and symptoms, Fatal Dose, Fatal period, Treatment,post mortem appearences and Medico legal importance
- Essentials of Food poisoning.
- Animal poisoning and zoonotic diseases -Signs and symptoms, classification, management, prognosis and medico legal importance
- Acids and Alkalis – Fatal Dose, Fatal period, signs and symptoms, cause of death, treatment, medico legal importance and postmortem appearance of – Sulphuric acid, Hydrochloric acid, Nitric acid, Hydrocyanic acid, Oxalic acid, Carbolic acid, Formic acid and alkalis in general, treatment and safety measures.
- Asphyxiants – Carbon monoxide, Carbon dioxide, Hydrogen sulphide;
- Stimulants – Antihistamines, Cocaine; Hallucinogens – LSD
- Sedatives and Hypnotics – Barbiturates
- Petroleum – Kerosene Poisoning
- Organo phosphorus compounds - Aluminum phosphate, Zinc phosphide
- Definition of Toxicology, classification of poisons, their actions and routes of administration, absorption, excretion, metabolism, diagnosis and general principles of treatment, duties of a medical practitioner in case of suspected poisoning.
- Metallic and Nonmetallic poisoning - General characters, Signs and symptoms, Fatal dose, fatal period, Treatment, Medico Legal Importance and Postmortem

- Appearance of Nonmetallic poisons – Phosphorous, iodine
- Metallic poisoning – Arsenic, Mercury, Lead, Copper, Zinc, Tin and Radiation metals.
- Alcohol poisoning (Ethanol and Methanol)
- Laws related to poisons - Poisons act 1919, Dangerous Drug act 1930,
- Drugs and cosmetic act 1940, Narcotic drugs and Psychotropic substances Act 1985, Pharmacy Act 1948, Criminal poisoning.
- Introduction, Definition and concise history of Forensic medicine (Vyavahara Ayurveda) and Medical jurisprudence (vidhivaidyaka). Introduction to Indian Penal Code, Indian Evidence Act and Criminal Procedure Code.
- Personal identity and its medico legal aspects, forensic odontology, forensic serology and DNA profiling.
- Death and its Medico Legal Aspects.
- Medico legal autopsy and exhumation.
- Injuries and wounds and its medico legal aspects.
- Dowry deaths, their medico legal importance and laws in relation to it.
- Asphyxial deaths and its Medico Legal importance.
- Death due to heat, cold and starvation.
- Virginity, Pregnancy, Delivery; Impotence & sterility, Artificial Insemination, Legitimacy, Abortion, Infanticide battered baby and their Medico Legal importance. Medical Termination of Pregnancy Act.
- Sexual offences, Sexual perversions and their medico legal aspects.
- Forensic psychiatry.
- Laws in relation to medical practitioners: Indian Medicine Central Council Act, Code of Medical Ethics, General Principles, duties of a physician towards his patient, towards the profession at large, professional services of physicians to each other, duties of a physician in consultation, duties of a physician in cases of interference, duties of a physician to the public, Physician's responsibility in criminal matters, duties of a patient, professional negligence, civil negligence, criminal negligence, medico legal aspects of Acquired Immune Deficiency Syndrome, rights of an unborn child, transplantation of human organs Bill 1994, Pre Natal Diagnostic Testing Act, donation of cornea, malingering of feigned diseases, international code of medical ethics for doctors.

| Practical | | 50 Hours |
|---|---|---|
| 1. | PostMortem examination | 10 |
| 2. | Evidence in the court | 10 |
| 3. | Demonstrations in the Toxicology museum | 10 |
| 4. | Clinical postings | 20 |

## 3.2 Kayachichikitsa

### Paper I

5. Detailed description of Chikitsa Sutra and Management of Jwara/Fever and its types.
6. Relevant Ayurvedic management according to Samprapti ghataka of following types of Fevers- Typhoid, Pneumonia, Pleurisy, Influenza, Mumps, Meningitis, Encephalitis, Tetanus, Yellow fever, Plague, Dengue Fever, Chikun Guniya, Leptospirosis, Viral Fever, Anthrax, Masurika (Small pox), Laghu Masurika (Chicken pox), and Romantika (Measles).
7. Knowledge of National Health programmes, and the relevant Ayurvedic management of the following diseases enlisted by World Health Organisation- Malaria, Filaria, Kala Azar, Leprosy, Tuberculosis, AIDS.
8. Introduction of general principles of maintenance of health and management of diseases of following systems of Medicine- Yoga, Naturopathy, Unani, Siddha Homeopathy, Acupuncture, Acupressure, Modern medicine, Physiotherapy and Rehabilitation.

### Paper II

1. Management of the diseases of Bronchitis, Bronchiectasis, Emphysema and COPDs.
2. Management of the diseases of Acid - Base & Electrolyte Imbalance.
3. Management of the diseases of Acid peptic disorders.

4. Management of the Hypotension, Hypertension.
5. Management of the Hepatitis, Cirrhosis of Liver, Leukaemia,
6. Management of Diabetes Mellitus and Dyslipidaemias.
7. Management of Osteomyelitis, Osteoporosis, Osteo Arthritis.
8. Management of diseases of Cystitis, Nephritis, Nephrotic Syndrome, Renal Failure.
9. Management of sexually transmited diseases, such as – Syphilis, Gonorrhoea, Chanchroid.

Paper III

1. Gullian Barrie syndrome, Muscular Dystrophy, Myasthenia Gravis, Motor Neuron Diseases and Neuralgias.
2. Diseases of different Endocrine Glands -such as Thyroid, Parathyroid, Pitutary and Adrenal Glands and their Ayurvedic management.
3. General introduction and principles of Management of diseases produced by Genetic, Environmental and Iatrogenic factors. Disorders due to drug and Food allergy and their management.
4. Treatment of Motion sickness. General introduction, types and Management of diseases caused by Immuno deficiency disorders and Auto Immune disorders.
5. Introduction and management of Anxiety disorders, Stress induced disorders, Depression, somatoform and Mood disorders, Psychosexual Disorders.
6. Alziemers Disease, Sleep disorders, General debility.
7. Etiopathogenisis and modern management of following diseases – Anthrax, Chicken pox, Chikun Guniya, Dengue Fever, Encephalitis, Influenza, Leptospirosis, Measles, Meningitis, Mumps, Plague, Pleurisy, Pneumonia, Small pox, Swineflu, Tetanus, Typhoid, Viral Fever, Yellow fever.
8. Nutritional deficiency disorders, Acid - Base & Electrolyte Imbalance and related clinical conditions.
9. Description and management of following Emergency Conditions – Acute Haemorrhages, Hypertensive Emergencies, Acute abdominal pain (Renal colic, Biliary colic, Gastritis, Pancreatitis, Peritonitis and Appendicitis), Acute Abdomen, Anuria/Oliguria, Congestive Heart Failure, Myocardial Infarction/Angina, Shock, Syncope, Convulsions, Hyperpyrexia, Hyperglycaemia, Hypoglycaemia, Status Asthmaticus, Acute Respiratory distress Syndrome, Drowning and Electric shock.
10. Vitamin deficiency diseases and their treatment.

Practical

| | | |
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| | Hospital Training | 9 months |
| 1. | General patient training | 5 months |
| 2. | Department of Manas roga | 15 days |
| 3. | Department of Communicable diseases | 15 days |
| 4. | Department of X-Ray and Laboratory | 1 month |
| 5. | Emergency Services in Kayachikitsa | 2 months |

## 3.3 Shalakya Practicals

Paper I

- Etiology, pathology, classification, clinical features and management of Acute and chronic Dacryocystitis, Epiphora, Blepharitis, Lacrimal cyst – aetiology, pathology, signs & symptoms and management. Knowledge about Dacryocystectomy and dacryocystorhinostomy
- Etiology, pathology, classification, clinical features and management of diseases Hordeolum externum, Chalazion, Ptosis, Trachoma, Trichiasis, Entropion, Ectropion, Lagophthalmus, Blepharospasm and lid growths – Etiology, signs and symptoms and management.
- Conjunctival degenerative disorders like pterygium, Scleritis, Episcleritis Sub-conjunctival hemorrhage, Xerosis their etiology, signs & symptoms and management.
- Ulcerative and Non Ulcerative Keratitis, Corneal opacity, Staphyloma, Hypophyon Ulcer & Uveitis, their aetiology, pathology,

symptoms and management.

- Conjuctivitis, Glaucoma, Dry eye Syndrome, Panophthalmitis, etiology, pathology, sign & symptoms and management.
- Refractive errors, Strabismus, Cataract, Retinitis pigmentosa, Amblyopia, Central serous retinopathy, Eale's disease, Hypertensive & Diabetic Retinopathies, Age related Macular degeneration, Optic Neuritis and Optic atrophy, – Etiology, pathology, signs and symptoms and management.
- Xerophthalmia and other malnutritional eye disorders.
- Introduction to Eye bank, Eye donation, Corneal Transplantation.
- Preventive ophthalmology and community ophthalmology.

Paper II

- Instruments and technology used in the diagnosis and treatment of diseases of Shira, Ear, Nose & Oral cavity
- Headache, its differential diagnosis and treatment along with diseases of Scalp.
- Anatomical and Physiological considerations of Karna (Ear)
- Examination of Ear.
- Otalgia, ASOM, CSOM, Deafness, Otomycosis, Tinnitus, Meniere's disease, Foreign body in ear and Sound pollusion, Etiology, pathology, clinical features and management. Tympanoplasty.
- Anatomical and Physiological considerations of Nasa (Nose)
- Rhinitis , Epistaxis, Nasal polyp, DNS, Nasal trauma, foreign body in the nose - Etiology, pathology, clinical features and management
- Anatomical sites of diseases of Oral cavity
- Generalised etiology Pathology Clinical picture and Treatment of Mukharoga ( Diseases of oral cavity)
- Etiology, pathology, classification, clinical features and management of diseases of Oshta (Lips) as detailed in literature of Ayurveda.
- Labioplasty, Hare lip, Retention cyst, Cracked lips.
- Anatomical and Physiological considerations of Danta (Tooth) in Ancient and Modern Medical literature. Examination of Teeth.
- Etiology, pathology, classification, clinical features and management of diseases of Danta (Teeth)
- Dental carries, dental tartar, causes and treatment.
- Etiology, pathology, classification, clinical features and management of diseases of Dantamula (Periodentia) - Gingivitis, Apical abscess, Periodontitis (Pyorrhoea), Periodential abscess and Mandibular sinus
- Etiology, pathology, classification, clinical features and management of diseases of) Jihwa (Tongue) - Glossitis, Tongue tie, Ranula, Benign and malignanat tumors of tongue
- Etiology, pathology, classification, clinical features and management of diseases of Talu (Palate) - Palatitis, Cleft palate, Uvulitis and Tumors of the palate.
- Etiology, pathology, classification, clinical features and management of diseases of) of Kantha and Gala (Pharnyx and Larynx) - Pharyngitis, Laryngitis, Tonsillitis, Carcinoma of larynx pharynx, Diphtheria, Adenoiditis, foreign body in the throat- etiology, pathology and treatment of these diseases.
- Etiology, pathology, classification, clinical features and management of diseases of Generalised mucosa of the oral cavity - Stomatitis, HIV and Herpes infection of oral cavity
- Anatomy and physiology of salivary, thyroid and para thyroid glands , their diseases and treatment - Dysphagia, Cervical lymphadenopathy, Manyastambha (Sternocleidomastoiditis).

Shalakya Practicals

Identification, uses, demonstration of surgical instruments and method of sterilization.

Training of case taking, bedside clinics and case presentation.

Training in para- surgical procedures-

Kshara karma Agnikarma Raktamokshana

4) Training of ward procedures Application of bandages, wound management, IV, Retrobulbar, Peribulbar, Facial, IM, Subcutaneous and Intradermal injections.

5) Training of minor procedures - Incision and drainage, Excision, Sutures

6) Observation of surgical procedures – Pterygium, Cataract Cyst removal

### 3.4 Shalya

#### Paper I

- Sterilization – Methods, Types and O.T. fumigation
- Anaesthesia - Definition, Types, anaesthetic agents, indications, contraindications, procedures, complications and management.
- Operative procedures, Experimental Surgery.
- Principles and procedures of reconstructive and cosmetic surgery.
- Introduction to physiology of fluids and electrolytes
- Dehydration and over hydration,
- Specific electrolyte losses and symptomatology and management of Acidosis, Alkalosis and Acid balance.
- Electrolyte changes in specific diseases like pyloric stenosis, intestinal obstruction and anuria.
- Various replacement fluids in surgery, mode of administration and complications.
- Nutrition – pre-operative, post-operative and intravenous alimentation.
- Blood Transfusion –Blood groups, components, compatibility, indications, contraindications and complications with management.
- Knowledge of antibiotics, analgesics, anti-inflammatory and emergency drugs in surgical practice.
- Knowledge of diagnostic techniques – X-ray, Imaging techniques, Ultra Sonography, CAT Scan, MRI, Biopasy/ cytological study.
- Ulcer types and their management
- Wound healing stages and management.
- Management of bites and strings
- Pramehapidaka- Diabetic carbuncle, Chippa -Paronychia, Kadara – Corn, Vrana Granthi – Keloid.
- Galaganda - Goitre, Gandamala, Apachi – Lymphadenitis, Pashanagardhabha – Parotitis.
- Venous disorders – Superficial and Deep venous thrombosis, haemangioma, varicose veins, Venous Ulcers and their management.
- Arterial disorders – Nidina, Samprapti, Lakshana and Chikitsha of Aneurysm, Burger's disease, Raynaud's disease.
- Diseases of tendons and ligaments – Tendinitis, tenosynovitis, ganglion and their management.
- Principles of Amputation.
- Surgical practice in AIDS – HIV and hepatitis patients.

#### Paper II

- Description of fracture of following bones with clinical features, diagnosis, complications and management – scapula, clavicle, humerus, radius, ulna, carpals, metacarpals, phalanges, femur, patella, tibia, fibula, tarsals, metatarsals, vertebrae, ribs, mandible, pelvis and skull bones.
- Dislocation of following joints with clinical features, diagnosis, complications and management of shoulder, elbow, wrist, hip, knee, ankle, mandible, vertebrae and Phalanges.
- Diseases of bone – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of – Congenital anamolies Osteomyelitis, cysts, tumours and tuberculosis.
- Cranio-cerebral injuries – mechanism, pathology, investigations, complications and management. Cerebral concussion, contusion and laceration. Acute extradural haematoma, Acute intracerebral and chronic subdural haematoma.
- Brain tumors and their management.

- **Diseases of breast** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of - Sthan Vidradhi- Breast Abscess, Sthan Arbuda-Breast tumors and their management.
- **Diseases of chest** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of - Pleural abscess, pleural effusion, tumors, pleurisy and their management.
- **Diseases of esophagus** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of - Congenital Anamolies, Oesophagitis, ulcer, varices, tumors and their management.
- **Diseases of stomach and duodenum** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of – Congenital pyloric stenosis, peptic ulcer, tumors and their management.
- **Diseases of small intestine** Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of - Mickel's Diverticulitis, Tuberculosis, obstruction, perforation and their management.
- **Diseases of large intestine** Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of – Tuberculosis, obstruction, perforation, tumor, appendicitis, crohn's disease, ulcerative colitis and their management.
- **Udara rogas** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of - Jalodara - Ascitis, Chidrodara – Perforation and Peritonitis, Badhagudodara – Obstruction and their management.
- **Diseases of rectum and anal canal** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of - Congentital disorders, Arshas -Haemorrhoids, Rectal polyp, Parikartika - Fissure in ano, Bhagandara – Fistula-in-ano, Guda Vidradi - Anorectal abscess, Gudabhramsa - Rectal prolapse, Sanniruddaguda - Anal stricture, Incontinance. Gudarbuda - tumor and their management.
- Abdominal Injuries and management
- **Diseases of liver** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Abscess, cysts, tumors, obstructive jaundice and Yakritdalyodar –Hepatomegaly .
- **Diseases of gall bladder** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Cholecystitis, cholelithiasis, tumors.
- **Diseases of pancreas** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Pancreatitis, pseudo pancreatic cyst, tumors .
- **Diseases of Spleen** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Pleehodara – Spleenomegaly, spleenic rupture.
- **Diseases of Kidney** - Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Congenital anomalies, polycystic kidney, perinephric abscess, tumor, renal calculus, renal injury .
- **Diseases of Ureter** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Calculus, obstruction.
- **Diseases of Urinary bladder** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Congenital anomalies, Ashmari -Vesicle calculus, Cystitis, tumor and Injury.
- **Mutragata & Mutrakrichra-** Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management. Retention of urine.
- **Diseases of Prostate** - Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Prostatitis, Prostatic abscess, Benign prostatic hypertrophy, carcinoma of prostate.
- **Diseases of Urethra** – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Urethritis, Stricture and rupture.
- **Diseases of Penis** – Aetiopathogenesis, classification, Clinical Features, Diagnosis,

Complications and management of Niruddhaprakasha -Phimosis, Parivartika - Paraphimosis, Avapatika - Prepuceal ulcer, Arbuda- tumor, Lingarsha -Venereal warts.

- Diseases of Scrotum and Testis – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Mutravriddhi - Hydrocele, Vrushana shotha-epididimo-orchits, Vrushana granthi- epididimal cyst, Scrotal filaria, Shukrashmari -Seminal calculus, torsion of testis, ectopic testis, undescended testis and tumors .
- Vriddhi Roga – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management.
- AntraVriddhi – Aetiopathogenesis, classification, Clinical Features, Diagnosis, Complications and management of Hernia - Inguinal, femoral, epigastric, umbilical, incisional and rare forms of Hernias.

Shalya – Practicals (Clinical and Surgical training)

1. Identification, uses, demonstration of surgical instruments and method of sterilization.
2. Training of case taking, bed side clinics and case presentation.
3. Demonstration and Practical training in Anesthesia.
5. Training of following ward procedures
   a. Application of bandages and splints.
   b. Catheterization
   c. Wound management
   d. Ryle's tube aspiration
   e. Injections - Intramuscular/intravenous/ subcutaneous/intradermal
6. Training / Practice of following procedures
   a. Incision and drainage of abscess,
   b. Excision,
   c. Sutures,
   d. Circumcision,
   e. Hydrocele,
   f. Hernial repair,
   g. Haemmorrhoidectomy,
   h. Fistulectomy,
   i. Fissurectomy,
   j. Exploratory Laparotomy
8. Training of surgical emergencies and management.

| Practical Training | 6 Months |
|---|---|
| OPD / IPD | - 4 Months |
| Operation theatre | - 1 Month |
| Emergency casualty | - 1 Month |

### 3.5 Prasuti Tantra Evum Stri Roga

Paper I

- Normal and abnormal conditions of Asthisandhi peshi Sahita stree shroni (Soft & Bony Pelvis) and its obstetrical importance, Shroni mapana (pelvic assesment) – Artavvaha and Stanyavaha strotamsi. Tryavarta yoni (Female internal and external genitalia).
- Menstrual cycle and their regulation by endocrine glands
- factors essential for conception, Monthwise development of foetus, lie, position, presentation, fetal skull,
- Apara (Placenta) Garbha Nabhinadi(Umbilical cord), Garbhodaka (Amniotic fluid), Jarayu (Foetal membranes)- Formation, development, function, normalcies and their abnormalities. Ulba (vernix caseosa).
- diagnosis of pregnancy
- Ante Natal care, examination investigation and management
- Abortions, Intrauterine Foetal death, pseudocyesis, Hydatidiform mole. Ectopic pregnancy, I.U.G.R, Bahugarbhata, Rh-incompatibility – causes, clinical features, complications and treatment.
- Minor ailments of pregnancy, Major Diseases of Pregnancy
- Pandu (Anaemia), Jwara, Shotha (oedema), pregnancy induced hypertension, toxemias of pregnancy, prasava poorva rakta srava (Antepartum haemorrhage) causes, clinical features, complications and treatment of all diseases, High risk pregnancies.
- linical features and management of normal labour, partogram, jatamatraparicharya, (care and resuscitation of newborn)

- Akalaprasava (Preterm labour), Kalatita prasava (post term labour), Vilambita prasava (prolonged labour)
- Induction and augmentation of labour
- cervical dystocia, cephalo pelvic disproportion, fetal distress.
- Garbha stithi parivartana (version), forceps delivery, Ventouse delivery. Muladharachhedan (Episiotomy) Udarapatanapurvaka garbha nirharana, ceasarean section.
- Aparasanga (Retention of placenta), prasavottara raktasrava (PPH). its causes, clinical features and treatment,
- Maternal distress, prasavajanya janananga abhighata, uterine inversion, amniotic fluid embolism etc.
- Emergency care in obstretics
- Pharmacotherapuetics of the drugs used in Obstretic emergencies, PNDT Act, MTP Act.

### Paper II

- Congenital malformations of female genital tract.
- abnormal uterine bleeding, Anartava ( Amenorrhoea), Alpartava ( hypo and oligomenorrhoea).
- infertility – causes, types, investigations and management
- Benign and malignant tumours of genital tract
- Pelvic infections including sexually transmitted infections and their management.
- Stanagranthi, stanavidradhi (abscess), stanashopha (mastitis) their etiopathology, clinical features, diagnosis, prognosis, treatment and complications.

### Shastra Karma

Surgical procedures their indications, Contraindications, purvakarma (pre-operative), Pradhanakarma (operative), Paschatakarma (post-operative), Complications and managements.

-Garbhashayamukha vistrutikarana (Cervical dilatation) & Garbhashaya lekhana (curettage), Garbhashaya mukhadahana (cauterization of Cervix), Swasthane garbhashaya sthapana (repair of genital prolapse), Arshanirharana (excision of polyp), Granthi evam garbhashaya nirharanasya samanya gyana (Hysterectomy), Female surgical sterilization.

- Removal of different types of cysts, Marsupilisation, PAP smear, endometrial and cervical biopsy.

Stree roga sambandhita pramukha aushadhi. Prasuti stree roga chikitsa upayogi yantra shastra parichaya and vyadhivinischaya upaya (investigative and diagnostic aids ).

Basic knowledge of laproscopy, Hysteroscopy, Hysterosalpingography, USG, X-RAY, Colposcopy. Garbhanirodhaka upaya.

Parivar niyojana, reproductive and child health care. AIDS/HIV control programme and importance of current national programme.

### Clinical Training

1. History taking and examination of antenatal and gynecological cases.
2. Observation of 10 labour cases.
3. Practical knowledge of performing sthanika chikitsa
4. Observation of surgical procedures mentioned above.
5. Identification, uses, demonstration of surgical instruments and method of sterilization.

## 3.6 Kaumarbhritya

- Navajata Shishu Paricharya (Neonatal Care): Care of the Samaya-purvajata Shishu (Preterm), Purnakalika Shishu (Full term), and Samaya-Paschatajata Shishu (Post term neonate), Nabhinala Chhedana (Cutting of umbilical cord), Complications of improper cutting of umbilical cord and its treatment, Rakshoghna Karma (Protective measures).
- Prana Pratyagamanam (Neonatal Resuscitation): Methodology; complications and their management (Ayurvedic and modern view).
- Modern approach of Neonatal Examination including gestational age assessment
- Navajat Shishu Poshana (Nutrional aspects including neonatal feeding): Specific feeding schedule as per Ayurvedic texts and modern

concept; Stana Sampat (Characteristics of normal breast), Stanya Sampat (Properties of normal breast milk) Stanyotpatti and Prasruti (Physiology of lactation), Stanya Sangathana (Composition of breast milk), Stanya Parikshana (Examination of breast milk), Stanya-Piyusha (Colostrum); Stanya-Pana-Vidhi (Method for breast feeding), Stanyakshaya-Stanyanasha (Inadequate production and absence of breast milk), Stanyabhave Pathya Vyavastha (Alternative feeding in the absence of breast milk), Various other feeding methods.

- General introduction to normal fetal growth from conception to full term maturity),Sharirika Vriddhi, Mansika evam SamajikaVikas (Physical, mental and social growth & development of child), Important mile stones during infancy and early childhood with special reference to gross & fine motor, language and personal – social development, Anthropometry-measurement and their interpretation.
- Normal requirements of nutrients for newborn, infant and children, common food sources, Satmya and Asatmya Ahara (Compatible and incompatible diet)
- Dentition and dental care): Dantasampat (Characteristics of healthy teeth), Danta Nisheka evam Dantodbeda (Eruption of teeth), Dantodbhedjanya Vikara (Dentition disorders).
- Knowledge of National Programs related to Child Health Care: Reproductive and Child Health (RCH) Program, Community Child Health Programs, Nutritional Programs, National Immunization Program and other programs incorporated by Govt of India, time to time.
- Birth injuries): Shwasavrodha (Asphyxia), Upasheershaka (Caput Succidaneum and Cephalohaematoma), Shastraghatajanya: Facial Paralysis, Erb's Paralysis, Bhagna (fractures).
- Congenital disorders) : Sahaja Hridaya Vikara (Congenital Cardiac Disorders) Jalashirshaka (Hydrocephalus), Khandaoushtha (cleft lip), Khanda-Talu (cleft palate), Sanniruddha Guda (Anal stricture / imperforated anus), Pada-Vikriti (Talipes equanovarus and valgus), Tracheoesophageal Fistula (TOF), Spina bifida, Meningocoele, Meningomyelocoele, Pyloric Stenosis.
- Hereditary diseases): Down syndrome, Turner Syndrome, Myopathy, Thalassemia, Sahaja Prameha (Juvenile Diabetes).
- Neonatal disorders): Navajata Kamala (Neonatal Jaundice), Navajata Netrabhishyanda (Neonatal conjuctivitis), Nabhiroga (Umbilical disorders), Mastishkaghata (Cerebral Palsy), Rakta Vishamayata (Neonatal Septicaemia), Rakta Vaishamyata (Rh-Incompatability), Raktasravi Vikara (Haemorrhagic Disorders), Ulvaka Roga.
- Nutritional disorders): Karshya, Phakka, Balashosha and Parigarbhika (Protein Energy Malnutrition), Vitamin and micronutrient deficiency disorders, Hypervitaminosis.
- Infectious Diseases): Karnamula Shotha (Mumps), Romantika (Measles), Rubella, Masurika (Chicken Pox), Rohini (Diphtheria), Kukkura-kasa (Whooping Cough), Dhanurvata (Tetanus), Krimiroga (Worm Infestations), Antrika Jwara (Typhoid), Mastisakavarnashotha (Meningitis), AIDS, Dengue, Malaria, Poliomyelitis, Rajayakshma (Tuberculosis), Jivwanujanya Yakrit shotha (Hepatitis)
- Pratishyaya (common cold), Kasa (Cough), Shwasa (Respiratory distress syndrome), Tamaka Shwasa (Bronchial Asthma), Utphullika, Swasanaka Jwara (Pneumonia/ Pneumonitis, Bronchiolitis), Gala shotha (Pharyngitis, laryngitis), Talukantaka (Tonsillitis)
- Ajirna (indigestion), Atisara (Diarrhoea) , Chhardi (Vomiting), Vibandha (Constipation), Mukhapaka (Stomatitis) , Gudapaka (Proctitis), Parikartika (Anal fissure) ,Udarshoola (Infantile colic), Pravahika (Dysentry) , Gudabhransa (Rectal Prolapse)
- Jwara (Fever), Pandu (Anemia), Mridbhakshanajanya Pandu ( Anemia associated with clay eating/ Pica).
- Kamala (Jaundice), Raktapitta (Haemorrhagic disorders), Krimija Hridroga ( Infectious cardiac diseases including Rheumatic Heart Disease), Uchcha-Raktachapa (Hypertension), Yakridpleehodara (Hepatospleenomegaly).
- Apachi (Lymphadenitis), Galaganda (Goitre), Gandamala (Cervical lymphaedenopathy), Sthaulya (Obesity)

- Mutraghata (Anuria), Mutrasanga (Retention of urine) Mutrakriccha (Dysurea), Vrikkashotha (Glomerulonephritis and Nephrotic syndrome)
- Pangutwa (Locomotor disorders), Vamanatwa (Dwarfism), Jadatwa (Mental disorders), Apasmara (Epilepsy), Unamada, Akshepa (Convulsions), Nirudhaprakasha (Phimosis), Kushtha (Skin disorders), Madhya Karna Shotha (Otitis media), Karnasrava (Otorrhoea)
- Behavioral disorders of children, their management and counseling: Breath holding spell, Shayyamutra (Bed wetting), Autism, ADHD (Attention Deficit and Hyperactive Disorders)
- Pediatric Emergency Management): Shock and Anaphylaxis, Fluid and Electrolyte Management, Drowning, Poisoning, Foreign body aspiration, Status epilepticus, hemorrhage, Acute Renal Failure, Febrile Convulsion, Status Asthmaticus

Practical 100 Marks

1. Clinical training of above mentioned disorders of children.
2. Navajata Shishu Paricharya (Care of the newborn)
3. Pranapratyagamana Vidhi (Resuscitation procedure of new born)
4. Vaccination
5. Knowledge of various equipments such as phototherapy unit, overhead radiant warmer, special resuscitation equipments, Panchakarma and their application
7. Knowledge of IV fluids administration, blood sampling
8. Breast feeding technique

# Annexure-II
## ASU Curriculum Evaluation Questionnaire

***Privacy Notice:** Personal information is being collected for the purpose of ascertaining the views of major stakeholders relevant to the education and practice of Ayurveda, Unani and Siddha medicine. The information you provide is confidential and will not be disclosed without consent or authority. Any questions or comments can be directed to Smt. Shailaja Chandra, Principal Investigator,(PI) Former Secretary, Department of AYUSH, Ministry of H & F.W., Govt. of India at shailajachandra1@gmail.com*

### Guidelines for Completion

### Background

- Background:
- The review on the status of ASU education & practice is being conducted by the PI as a part of a Project undertaken with the prior approval of the Dept. of AYUSH MOHFW. In this section the effort is to gather the views of important stakeholders among teachers, researchers, practitioners and students who have had experience of or have been exposed to the teaching syllabus of Ayurveda, Unani and Siddha medicine. It is not intended to comment on the performance of any organization or group. The effort is to ascertain how far the stakeholders feel that a significant part of the syllabus of UG and PG is directed specifically to address patient-care. Also to seek suggestions on how the focus can be modified to benefit the public and orient the ASU practitioner a person with competencies and skills that are capable of responding to specific medical and health concerns.
- The review on the status of ASU education & practice is being conducted by the PI on the behest of Department of AYUSH.

### Purpose And Scope of Review

The purpose of the review is to answer the following questions:

1. Does the CCIM ASU Curriculum identify and provide the necessary skills, knowledge, and experience to turn out practitioners that inspire confidence in providing medical and public health care collaboratively and in a variety of health settings?

Does the CCIM ASU Curriculum have sufficient practical content and application to equip the graduate/ postgraduate with competencies and skills to make him a sought after health provider because of his special training? The scope of the review will include:

- *Structure/*format year– to-year
- *Terminology* – to ensure consistency with the objective of preparing the graduate /post-graduate for using his knowledge and skills for practical application in the areas of research/education/industry but predominantly practice.
- *Content* – to ensure current relevance, focus on preventive, promotive and curative health in practical terms based on ASU principles
- *Description of additional tools and resources* needed to upgrade the practical aspects of teaching with the aim of producing good physicians for the benefit of society..

### Guidelines for Respondent

- In your review you should consider whether the objectives (both theoretical and practical), the duration of course, the assessment/instructional tools, and equipments/supplies are sufficient and appropriate.

- Each section should contain some response, however brief, to indicate that you have assessed this aspect of the program. Please answer questions you feel you are qualified to respond to based on your experience/training, in greater depth.
- We value your input which is aimed at informing policy-makers about the knowledge and skills presently given to the ASU students through the curriculum and a projection of the practical suggestions of stakeholders. There are a number of way that you can contribute:
  - Provide a postal submission by 30 October, 2010. Receipt of submissions will be acknowledged. If no response is received the designations and addresses of those that did not join the consultation will be listed to show efforts made to involve maximum stakeholders.
  - Complete an online questionnaire by 30 October, 2010
  - Have a phone interview during October 2010 if you wish to give only a limited suggestion. Project staff will conduct the interview during October, 2010. Participants will be contacted in advance to arrange a suitable time.
  - If you would like to participate in a phone interview please complete the following to enable us to contact you. Responses will be acknowledged on receipt.
  - Contact Information:
  - Name:
  - Role: Student/Teacher/Administrator
- For more information, please contact Smt. Shailaja Chandra:
  shailajachandra1@gmail.com
- Once completed, this form must be submitted directly to the Principal Investigator. The address is as follows:

Smt. Shailaja Chandra
Room 502
Central Council for Research in Unani Medicine
61-65, Institutional Area
Opp. D-Block
Janakpuri
New Delhi-110 058 (India)
(Mark all correspondence with Response to Education Questionnaire in Bold on the cover.)

## ASU Curriculum Evaluation Questionnaire

(To be completed by respondent)

### Section A: Respondent Information

Name of Program Being Evaluated: BAMS/BSMS/BUMS/MD/MS (Ay)(Siddha)(Unani)

Name of the Institute: ______________________________

Respondent's Name: ______________________________

Position/Title: ______________________________

Years of Combined Experience and Education in Field: ______________________________

Mailing Address: ______________________________

Telephone: ______________ E-mail: ______________ Fax: ______________

### Section B: Curriculum Evaluation

*(NOTE: Please answer only those questions you feel you are qualified to based on your experience/training)*

1. Does the curriculum description capture the types of duties a graduate can expect to perform in the work environment? Please explain.

   ______________________________

2. Do you feel that the program length is sufficient to produce graduates with the required entry-level knowledge skills and competencies required to function as a confident, ASU practitioner? Please explain.

   ______________________________

### Section C: Admission Requirements

3. Do you feel that the present program entrance/admission requirements ensure that students possessing basic knowledge and background enter the program? Please explain.

   ______________________________

4 Do you feel specific subjects (e.g.Maths/Physics/Chemistry/Biology) – for entrance/admission are required to fulfill course objectives? Please explain.

   ______________________________

### Section D: Curriculum Content

5. Does the sequencing of training (i.e. order of subjects presented) within the curriculum properly address course pre-requisites and/or co-requisites? Are there any subjects within the program you feel should be pre-requisites for other subjects, but have not been identified? Please explain.

   ______________________________

6. Is the time allocated to EACH subject sufficient, excessive, or inadequate from the point of view of building competencies to practice ASU? Please explain.

   ______________________________

7. Do you feel that all necessary learning objectives are includedwithin the individual subjects? Please explain and suggest or give examples of what should be additionally included/excluded.

---

8. Are there any subjects that contain learning objectives not particularly relevant to the subject/program? Please specify, providing a rationale or examples where necessary.

---

9. Are there areas in the examination requirements that need to be revised or removed because they are outside the prescribed competencies and skills expected of an ASU practitioner? Please specify and give a rationale or examples where necessary.

---

10. Do you feel that there is a proper balance between theory (i.e. classroom) and practice (i.e. lab/ clinics?) Please explain where greater practical application is called for.

---

## Section E: Resources

11. Do you feel that the tools, equipment and/or supplies listed for practical components of the curriculum are satisfactory for program delivery (i.e. do they support the learning objectives of the program)? Please explain.

---

12. Are the textbooks listed with the curriculum adequate for program delivery (i.e., are the textbooks sufficiently updated and relevant considering the present revival of interest in traditional medicine. Please explain.

---

13. Do you feel there is adequate learning resources (i.e. print media, audio-visual materials, etc.) provided for program delivery to actively engage students? Please explain.

---

14. Do you feel that instruction is reinforced with appropriate technical inputs (i.e., computer software, hardware, etc)? Please explain where you feel change is required..

---

15. Is there specialized equipment, textbooks, software or other resources which you feel are not listed but would strengthen the delivery of this program from a future practitioner's point of view? Please specify, providing a rationale where necessary.

---

## Section F: Program Instruction/Evaluation Methods

16. Are there any instructional methods that you would suggest for subject/program delivery? Please specify, providing a rationale and good examples observed elsewhere if relevant.

---

17. Do you feel that the methods of evaluation used for this are program appropriate? Is there an adequate balance of theoretical and practical assessment conducted for each course)? Please explain.

---

18. Do you have recommendations for additional evaluation methods which would ensure student involvement and competency? Please specify, providing a rationale where necessary.

---

19. What qualifications and experience do you feel will be required for potential instructors hired to teach core competencies/subjects/allopathic content within this program?Please specify, providing a rationale where necessary.

---

20. Are there specific courses within the program that require a different combination of training, experience and clinical exposure than that which is presently provided generally by the teaching faculty ? Please specify areas /subjects/ practical classes,

---

### Section G: Graduation Requirements/Employment Requirements

21. Are the requirements for successful completion (i.e. passing grades of subjects, internship term completion, etc) of the program sufficient? Please explain.

---

22. Please list in order of priority three most important type(s) of job options available to graduates of ASU medicine, selecting from Private Practice, resident in general hospitals/ Nursing Homes, further studies like P.hd, MBA,Research, industry (labs and/or quality control).

---

### Section H: Internship Term

23. Do you feel that the internship term is appropriately placed within the program? Please explain.

---

24. Are the objectives of the internship term clear and sufficient to further build on the students' knowledge and skill level already developed? Please explain.

---

25. Is the duration of the internship training adequate to reinforce, and allow students to make a practical application of, the theoretical concepts already learned? Please explain.

---

26. Are the evaluation methods utilized for the internship term appropriate? Please explain.

---

### Section I: Practice

27. In your view what kind of modification is needed in the syllabus to be able to cater to the medical needs of people both in urban and rural areas where the ASU practitioner essentially represents the ASU system but is equipped to deal with critical situations when no allopathic practitioner may be available.

28. Are you aware of any states/government orders which allow the ASU practitioner or integrated medicine practitioner to prescribe drugs and conduct certain interventions using allopathic systems/ medication?Give details where you can

29. It is stated at different public fora that the ASU practitioner hardly uses his ASU knowledge and skills as a practitioner as he has to provide services as per public demand and choice which calls for quick relief.

30. To what extent does each part of the prescribed syllabus refer to knowledge as contained in the selected ASU texts and mastery of Sanskrit/ Urdu and how much does it deal with knowledge and skills that will be of direct relevance to providing ASU treatment to patients?

31. Is there scope to include more applied Ayurveda approaches, techniques and skills which would be relevant to rural areas, or to specific disease oriented target groups where Ayurveda or Siddha or Unani has a clear strength?

32. Can you suggest a few examples which do not find place in the syllabus but which are very important only to give an idea of what kind of competencies can be included under ASU which would be useful and sought after by beneficiaries that search for gentler alternatives to interventions based on chemical drugs?

33. Do you think that the functions of curriculum design should be handled by special agencies/groups that are conversant with the deficiencies in health manpower and the search for treatment of chronic diseases, auto-immune diseases and intractable conditions?

34. Do you think that a periodic review of each academic program is needed to maintain relevance and promote excellence? If yes, how frequently should the program be reviewed?

### Section I: Additional Comments

Please provide any additional comments regarding this program you feel have not been addressed.

## Section J: Respondent Declaration

I certify that my participation in the study is purely voluntary and the responses given by me were based on my own individual perception and I am not compelled to respond in any particular way by the investigators or by any other authority.

Name: Date of Completion:

Signature: Telephone Number:

# Annexure-III

## List of Ayurveda, Siddha and Unani Colleges to whom Questionnaires were sent by Post

### Ayurvedic Colleges

1. Dr. BRKR Ayurved College, SR Nagar, Hyderabad–500038 (Andhra Pradesh)
2. Dr. NR Sastry Government Ayurvedic College, Besides VK Super Bazar, Bandar Road, Vijayawada–520002 (Andhra Pradesh)
3. Government Ayurved College, Jalukbari, Guwahati–781004 (Assam)
4. Government Ayurved College, Post-graduate Training & Research Institute, Kadam Kuan, Patna–800003 (Bihar)
5. Ravindranath Mukherji Ayurved College, District Champaran, Motihari–845401 (Bihar)
6. Rajkiya Ayodhya Shivkumar Ayurved Mahavidyalaya, Begusarai–850101 (Bihar)
7. Swami Raghwendracharya Tridandi Ayurved Mahavidyalaya, Karjara Station, PO Manjholi, Gaya–823001 (Bihar)
8. Shri Motisingh Jageshwari Ayurved College & Hospital, Baratelpa, Chhapra–841301, District Saran (Bihar)
9. Ayurved Mahavidyalaya, Ghughi Chowk, Gaya–823001 (Bihar)
10. Rajiv Lochan Ayurved Medical College, Village Chandkhuri, Post Chandkhuri, Gunderdehi Road, District Durg–491221 (Chhatisgarh)
11. Chhatisgarh Ayurved Medical College, GE Road, Manky, Rajnandgaon–491441 (Chhatisgarh)
12. Bharteeya Sanskrit Prabodhini Gomantak Ayurved Mahavidyalaya & Research Centre, Vajem, Shiroda–403103, District South Goa (Goa)
13. JS Ayurved Mahavidyalaya, College Road, Nadiad–387001 (Gujarat)
14. Government Ayurved Mahavidyalaya, Ajwa Road, Baroda–390001 (Gujarat)
15. Aryakanya Shudha Ayurved Mahavidyalaya Ayurved Hospital, Kareli Bagh, Baroda–390018 (Gujarat)
16. Government Ayurved College, Sadar Bagh, Junagarh–362001 (Gujarat)
17. Shri Balahanuman Ayurved Mahavidyalaya, Lodra, Tamansa, District Gandhinagar (Gujarat)
18. Shri Gangadhar Shastri Gune Ayurved Mahavidyalaya, Vishrambag, Ahmednagar–414001 (Maharashtra)
19. Govindbhai Jorabhai Patil Ayurved Medical College, PB No. 2, Vallabh Nagar, Vidyanagar–388121 (Gujarat)
20. Shri Gulab Kunverba Ayurved Mahavidyalaya, Dhanwantri Mandir, Jamnagar–361008 (Gujarat)
21. Institute of Post-graduate Training & Research, Gujarat Ayurved University, Jamnagar–361001 (Gujarat)
22. Shri Maru Singh Memorial Mahila Ayurved Degree College, Kanya Gurukul, Khanpur Kalan, Sonepat–124301 (Haryana)
23. Gaur Brahmin Ayurved College & Hospital, Village Branmanawas, District Rohtak–124001 (Haryana)
24. Shri Krishna Government Ayurved College, Near DC Residence, Umri Road, Kurukshetra–132118 (Haryana)
25. Chaudhary Devilal College of Ayurveda, Bhagwan Parshuram Education Trust, Ambala Road, Jagadhri–135003 (Haryana)
26. Rajiv Gandhi Rajkiya Government Ayurvedic Post-graduate College, District Kangra, Paprola–176115 (Himachal Pradesh)
27. Jammu Institute of Ayurved & Research, Muthi, Nardhani Raipur Ban, Talab Road, Jammu Tawi–181123 (Jammu & Kashmir)
28. Surya Mukhi Dinesh Ayurved College & Hospital, Dinesh Nagram Booty, Ranchi–835217 (Jharkhand)
29. JSS Ayurved Medical College, Shri Shivaratheshwara Nagar, Mysore–570015 (Karnataka)
30. Government Ayurved College & Hospital, Vishweshwariah Circle, Sayaj Rao Road, Mysore–570021 (Karnataka)
31. Government Ayurved College, Dhanwantri Road, Bangalore–560009 (Karnataka)
32. Government Taranath Ayurved College, Anantapur Road, Ballary–583101(Karnataka)
33. Ashwini Educational Association's Ayurved College, 1851/33, Anjaneya Layout, Davangare –577004 (Karnataka)
34. Shri Vijay Mahenthesh Ayurvedic Medical College, PB No.15, Ilkal, District Bagalkot–587125 (Karnataka)

35. Bapuji Ayurvedic Medical College, Rajendra Nagar, Main Road, Shimoga-577201 (Karnataka)
36. Shri JG Cooperative Hospital Ayurved Medical College, Ghataprabha, District Belgaum–591321 (Karnataka)
37. Shri Kalabhairaveshwara Swami Ayurved College, No.10, Pipe Line Road, RPC Layout, (Adichunchangiri Matt), Vijayanagar, Bangalore–560040 (Karnataka)
38. Indian Institute of Ayurvedic Medicine & Research, Bangalore Palace Compound, Jaya Mahal Road, Bangalore–560006 (Karnataka)
39. Shri Jagadguru Gavisiddeshwar Sansthan, Gavimath, Koppal–583231 (Karnataka)
40. Shri Hingulambika Education Society Ayurved College, Sidramrao Astikar Marg, Bhavani Nagar, Maktampura, Gulbarga-585101 (Karnataka)
41. Shri Basaveshwar Vidya Vardhak Sangha Ayurved College, Bagalkot–587101 (Bijapur) (Karnataka)
42. Gramin Ayurved Medical College, Tq. Jamkhandi, Terdal, District Bagalkot–587315 (Karnataka)
43. Shri SBS Ayurved College, Mundargi, District Gadag–582118 (Karnataka)
44. Bhagvan Mahavir Jain Ayurved College, Gajendergarh, District Gadag–582114 (Karnataka)
45. Rama Krishna Ayurved College, No. 2345/2185, Ramana College Road, Kamakshi Palaya, Magadi Road, Bangalore–560079 (Karnataka)
46. Shri DM College of Ayurved, Laxminarayan Nagar, P.O. Kuthapady, Udupi–574118 (Karnataka)
47. Karnataka Ayurved College, KECT Tower, Near Daivjna, Kalyan Mantap, Hoige Bail, Ashok Nagar, PO Mangalore (Karnataka)
48. Shushrutha Ayurved College, No. 5, Sy. No. 23, Kathriguppe BSK, IIIrd Stage, Bangalore–560085 (Karnataka)
49. Ashwini Ayurvedic Medical College & Research Centre, Ring Road, Maralur, Tumkur–572105 (Karnataka)
50. Acharya Desh Bhushan Ayurved Medical College, Bedkihal, Shamanewadi (Shanti Nagar), District Belgaon–591214 (Karnataka)
51. Government Ayurved College, Dhanwantri Nagar, P.O. Tripunitura, District Ernakulam–682301 (Kerala)
52. Nangelil Ayurved College, Nellikuzhi, PO Kothamangalam, Nangelil, Ernakullam–686691 (Kerala)
53. PN Panicker Sauhruda Ayurved Medical College, PN Panicker Sauhruda Trust, Parakalai, Kanhangad, Kasaragod (Kerala)
54. Vaidyaratnam Ayurved College, Ollur, Thalkkattusseryh, Trichur–680322 (Kerala)
55. VPS Varier Ayurved College, Kottakkal, District Malappuram, Edarikode–676501 (Kerala)
56. Mannam Ayurved Medical College, The Mannam Sugar Mills Cooperative Ltd., 4324, Pandalam–689501 (Kerala)
57. Parrasianikkadavu Ayurved College, PO Parassiaikkadavu, District Kannur–670563 (Kerala)
58. College of Ayurved Medical College & Hospital, Bara Ghat, Jhansi Road, Gwalior–474001 (Madhya Pradesh)
59. Government Dhanwantri Ayurved College, Mangalnath Road, Ujjain–465001 (Madhya Pradesh)
60. Pt. Shivshaktilal Sharma Ayurved Mahavidyalaya, 497, Katju Nagar, Ratlam (Madhya Pradesh)
61. Shaskiya Swashasi Ashtanga Ayurved Mahavidyalaya, Lok Manya Nagar, Keshar Bagh Road, Indore–452009 (Madhya Pradesh)
62. Subh Deep Ayurved College, 11, Press Complex, AB Road, Indore (Madhya Pradesh)
63. Government Ayurved College & Hospital, New Outdoor Building, Rewa–484001 (Madhya Pradesh)
64. Pt. Khushilal Sharma Government (Autonomus) Ayurved College & Institute, Science Hills, Behind Mani, Bhopal–462003 (Madhya Pradesh)
65. Veenavadini Ayurved College & Hospital, Opp. Shriram Mandir, Chuna Bhatti, Kolar Road, Bhopal–460001(Madhya Pradesh)
66. Ramrao Patil Ayurved Mahavidyalaya & Rugnalaya Purna, Tq. Purna, District Parbhani (Maharashtra)
67. Rural Institute of Ayurveda & Research Center Hospital, Myaniat Vidyagiri, Myani, Tal. Khatav, District Satara (Maharashtra)
68. JJ Magadum Ayurved Medical College, Shirolwadi Road, Jaisinghpur, District Kolhapur–416101 (Maharashtra)
69. Mahatma Gandhi Ayurved College, Hospital & Research Centre, Swangi, Meghe, Salod Hirapur Mousa Area, Wardha (Maharashtra)

70. Ashvin Rural Ayurved College, Sadhvi Preeti Sudhaji Maharaj Nagar, Manchi Hill, Ashvi B.K., Tal. Sangamner, District Adhmednagar–413714 (Maharashtra)
71. Dhanwantari Ayurved College, Infront of Kala Mandir, Nanded Road, Udgir, District Latur–413517 (Maharashtra)
72. Annasaheb Dange Ayurved College, Ashta, Tal. Valva, District Sangali–416301 (Maharashtra)
73. Manjara Ayurved College & Hospital, C/o Zilla Parishad Boys School Gandhi Maidan, Bhoi Gall, Latur–413531 (Maharashtra)
74. Jupiter Ayurved College & Tarini Ayurved Hospital, Sawarkar Nagar, Khamla Road, Nagpur–440015 (Maharashtra)
75. Dr. Dy Patil Pratishtan Ayurved College, Pimpri, Pune–411018 (Maharashtra)
76. Padamshri Dr. Vitthal Rao Vikhl Patil Foundation Ayurved College, Shevgaon, District Ahmednagar (Maharashtra)
77. Shri Saptashrungi Ayurved College, Yashwant Mandai, Ravivar Peth, District Nasik–422001 (Maharashtra)
78. Lt. Sunil Ramshingji Chunawale Ayurved College, Deen Dayal Nagar, Chikhli, District Buldana–443201 (Maharashtra)
79. Shri Gajanan Maharaj Sansthan Ayurved Mahavidyalaya, Pusad, District Yeotmal–445204 (Maharashtra)
80. Vidarbha Ayurved Mahavidyalaya, Hanuman Vyayam Nagar, Amrawati–444605 (Maharashtra)
81. Bhau Saheb Maulak Ayurved Mahavidyalaya, Great Nag Road, Nandanwan, Nagpur–440009 (Maharashtra)
82. Nalasopara Ayurved College (Swargiya Shri Suresh Nursingh Dube), PO Nalasopara, Tal. Vasai, District Thane–401209 (Maharashtra)
83. RJVS Bhaisaheb Sawant Ayurved Mahavidyalaya, Sutikagriha Campus, Khaskilwada Sawantwadi, District Sindhu Durg–416 510 (Maharashtra)
84. Yerala Medical Trust & Ayurved College, Sector No.4, Kharghar Station, Navi Mumbai, District Raigad, Mumbai–400614 (Maharashtra)
85. Chaitanya Ayurved Mahavidyala, Sakegaon, Bhusawal, District Jalgaon–425201 (Maharashtra)
86. Dada Saheb Surupsingh Naik Ayurved Mahavidyalaya, Shri Suwalal Bafna, Vidyanagar, Mumbai Agra Mahamarg, Nangaon, Dhule–424004 (Maharashtra)
87. Hanuman Shikshan Prasarak Mandal's Ayurved Mahavidyalaya, Peth, Vadegaon, Tal. Hatkanangale, District Kolhapur (Maharashtra)
88. Seth Govindji Raoji Ayurved Mahavidylaya, 21/A/13, Budwar Peth, Samarat Chowk, Sholapur–413002 (Maharashtra)
89. College of Ayurveda & Research Centre, Akurdi, Pune–411044 (Maharashtra)
90. Ayurved Mahavidyalaya, Shri Shivaji Nagar, Rahuri, Ahmednagar–413706 (Maharashtra)
91. Vasant Dada Patil Ayurved College, South Shivajinagar, Sangli–416416 (Maharashtra)
92. Karmvir Vyanketrao Tanaji Randhir Ayurved College, Boradi, Tal. Shirpur, Dhule–425428 (Maharashtra)
93. Ayurved Mahavidyalaya, Ganeshwadi, Panchavati, Nasik–422003 (Maharashtra)
94. Kaviraj Ananta Tripathy Sharma Ayurved Mahavidyalaya, Ankushpur, Ganjam–761100 (Orissa)
95. Sri Nrusinghnath Ayurved College & Research Institute, Nrusinghnath, PO Paikmal, District Bargarh–768039 (Orissa)
96. SMBT Ayurved College, Nandihills, Dhamangaon, Teh. Igatpuri, District Nasik (Maharashtra)
97. Dayanand Ayurved College, Mahatma Hans Raj Marg, Jallandhar City–144008 (Punjab)
98. Shaheed Kartar Singh Sarabha Ayurved College & Hospital, VPO Sarabha, District Ludhiana (Punjab)
99. Smt. Urmila Devi Ayurvedic College & Hospital, VPO Kharkhan, Una Road, Hoshiarpur–146001 (Punjab)
100. SSMD Ayurvedic College & Hospital, GT Road, Moga–142001 (Punjab)
101. National Institute of Ayurved, Madhav Vilas Palace, Amer Road, Jaipur–302002 (Rajasthan)
102. JR's Tantia Shri Ganganagar College of Ayurvedic Sciences, Hanumangarh Road, Ricco, Sriganganagar (Rajasthan)
103. Sri Sairam Ayurveda Medical College, Leo Nagar, Tambaram West, Chennai–600044 (Tamil Nadu)
104. Government Gurukul Ayurved College, Gurukul Kangari, Haridwar–249404 (Uttarakhand)
105. Government Rishikul Ayurved College, Haridwar–249401 (Uttarakhand)

106. Uttaranchal Ayurved College, Ayurved Estate 17, Old Mussorie Road, Rajpur, Dehradun–248009 (Uttarakhand)
107. Padamshri Dr. Dy Patil College of Ayurveda and Research Institute, Nerul, Navi Mumbai, Sector 7, Mumbai–400706
108. Sri Sai Ayurved College & Hospital, Sarsol, GT Road, Aligarh–202001 (Uttar Pradesh)
109. Patanjali Bhartiya Ayurvigyan Avum Anusandhan Sansthan, Patanjali Yog Peeth, Maharishi Dayanand Gram, Near Bahadrabad, Haridwar–249402 (Uttarakhand)
110. Desh Bhagat Ayurvedic College & Hospital, Post Box No.78, Mandi Gobindgarh, District Fatehgarh Sahib–147301 (Punjab)
111. Shri Radha Krishna Toshniwal Ayurved Mahavidyalaya, Station Road, Akola–444001 (Maharashtra)
112. Kisan Dnyanoday Mandal Gudhe's Ayurved College, Maharaja Pratap Housing Society, Anna Saheb Sonusing Patilnagar, Chalisgaon, District Jalgaon (Maharashtra)
113. Smt. KC Ajmera Ayurved Mahavidyalaya, Dayasagar Educational Campus, Deopur Dhule–424 202 (Maharashtra)
114. Yashwant Ayurved Mahavidyalaya, PO Kodoli, District Kolhapur–416114 (Maharashtra)

## Siddha Colleges

1. Government Siddha Medical College, Palayamkottai, Tirunevlveli–627002 (Tamil Nadu)
2. Government Siddha Medical Collge, Arumbakkam, Chennai (Tamil Nadu)
3. Akila Thiruvithamcore Siddha Vaidya Sangam Siddha Maruthuva Kallory & Hospital, Munchirari, Kanyakumari (Tamil Nadu)
4. Sri Sai Ram Siddha Medical College & Research Centre, Chennai (Tamil Nadu)
5. Velumailu Siddha Medical College, Sriperumbudur, Kancheepuram (Tamil Nadu)
6. Santhigiri Siddha Medical College, Thiruvanathapuram (Kerala)
7. National Institute of Siddha Tambaram, Chennai (Tamil Nadu)
8. RVS Siddha Medical College, 242 B, Trichy Road, Sulur (Tamil Nadu)

## Unani Colleges

1. Government Nizamia Tibbia College, Hyderabad (Andhra Pradesh)
2. Dr. Abdul Haq Unani Medical College, Kurnool (Andhra Pradesh)
3. Government Tibbi College, Patna (Bihar)
4. Zulfequar Haider Unani Medical College, Siwan (Bihar)
5. Salfia Unani Medical College, District Darbhanga (Bihar)
6. Nizamia Unani Medical College and Hospital, Dumri, District Gaya (Bihar)
7. Mohsin-e-Millat Unani Medical College, Raipur (Chhatisgarh)
8. Ayurvedic & Unani Tibbia College, Karol Bagh, New Delhi
9. Jamia Hamdard (Deemed University), Hamdard Nagar, New Delhi
10. Unani Medical College, Institute of Asian Medical Sciences, Srinagar (Jammu & Kashmir)
11. Kashmir Tibbia College, Srinagar (Jammu & Kashmir)
12. Government Unani Medical College, Bangalore (Karnataka)
13. Luqman Unani Medical College, Bijapur (Karnataka)
14. Tipu Sultan Unani Medical College, Gulbarga (Karnataka)
15. HMS Unani Medical College, Tumkur (Karnataka)
16. National Institute of Unani Medicine, Kottigepalya, Magadi Main Road, Bangalore (Karnataka)
17. Saifia Hamidia Unani Tibbia College, Burhanpur (Madhya Pradesh)
18. Al-Farooque Unani Tibbia College, Indore (Madhya Pradesh)
19. HSZH Government Unani Medical College, Bhopal (Madhya Pradesh)
20. HAH Unani Medical College, Dewas (Madhya Pradesh)
21. Anjuman-i-Islam's Dr. M. Ishaq Jamkhanawala Tibbia Unani Medical College, Mumbai (Maharashtra)
22. Mohammadia Tibbia College and Assayer Hospital, Malegaon, District Nasik (Maharashtra)
23. ZVM Unani Medical College, Pune (Maharashtra)

24. Ahmed Gharib Unani Medical College, Nandurbar (Maharashtra)
25. Iqra Unani Medical College, Jalgaon (Maharashtra)
26. Rajputana Unani Medical College, Jaipur (Rajasthan)
27. Rajasthan Unani Medical College, Jaipur (Rajasthan)
28. Government Unani Medical College, Chennai (Tamil Nadu)
29. State Unani Medical College, Allahabad (Uttar Pradesh)
30. State Takmil-ut-Tib College, Lucknow (Uttar Pradesh)
31. Jamia Tibbia, Deoband, Saharanpur (Uttar Pradesh)
32. Ibn-e-Sina Tibbia College, District Azamgarh (Uttar Pradesh)
33. Deoband Unani Medical College, Saharanpur (Uttar Pradesh)
34. Allama Iqbal Unani Medical College, Muzaffarnagar (Uttar Pradesh)
35. Aligarh Unani Medical College, Aligarh (Uttar Pradesh)
36. SGM Unani Medical College, District Ghazipur (Uttar Pradesh)
37. Eram Unani Medical College, Lucknow (Uttar Pradesh)
38. Dr. Abdul Ali Tibbiya College, Lucknow (Uttar Pradesh)
39. Ajmal Khan Tibbia College, Aligarh Muslim University, Aligarh (Uttar Pradesh)
40. Calcutta Unani Medical College, Kolkata (West Bengal)
41. Yunus Fazlani Medical College & Al-Fazlani Unani Hospital, Aurangabad (Maharashtra)

# Annexure-IV
## List of the Experts consulted

## Ayurveda

### Experts consulted at Mumbai

1. Milind Mahaiskar, Secretary Medical Education, Maharashtra.
2. Dr. KR Kohli, Director ISM, Maharashtra.
3. Dr. PU Deshmukh, Dean, RA Podar Ayurved College, Worli, Mumbai.
4. Dr. Satish Shah, Trustee, Ayurved College, Sion, Mumbai.
5. Dr. Gajanan Pol, Trustee, Yerala Ayurved College, Kharghar, Navi Mumbai.
6. Dr. VV Doiphode, Trustee, Tilak Ayurved College, Pune.
7. Dr. Omprakash Dube, Trustee, Nallasopara Ayurved College, Dist.Thane.
8. Dr. Tathed, Dean, Yerala Ayurved College, Kharghar, Navi Mumbai.
9. Dr. Ajay Salunke, Principal, Smt. KGMP Ayurved College, Charniroad, Mumbai.
10. Dr. RN Gangal, Principal, Tilak Ayurved College, Pune.
11. Dr. Dineshchandra Goradia, Ayurved Medical Practitioner.
12. Dr. Sanjay P Chhajed, Ayurved Medical Practitioner.
13. Dr. Prasad Vaidya, Ayurved Medical Practitioner.
14. Dr. Dattatraya B Muzumdar, Ayurved Medical Practitioner.
15. Dr. Kakani, Ayurved Medical Practitioner.
16. Dr. Vilas Nanal, Ayurved Medical Practitioner.
17. Dr. Ramesh Deshmukh, Ayurved Medical Practitioner.
18. Dr. DV Shukla, Asso.Professor, RA Podar Ayurved College, Worli, Mumbai.
19. Dr. Kavindra Singh, Trustee, Nallasopara Ayurved College, Dist.Thane
20. Dr. Anirudha Tripathi, Ayurved Medical Practitioner.
21. Dr. Dipak D Goradia, Ayurved Medical Practitioner.

### Experts consulted at Raipur

1. Dr. GS Badesha, Director AYUSH, Chattisgarh.
2. Dr. AT Dabke, Vice Chancellor, Health University, Raipur.
3. Dr. DK Tiwari, Principal Ayurveda College.
4. Dr. DK Kataria, Prof. (Basic Principles) Ayu. College.
5. Dr. S Mohanty, Prof. (Ras Shastra) Ayu. College.
6. Dr. BP Sharma, Prof. (Dravyaguna) Ayu. College.
7. Dr. Suraj Agrawal, Prof (PSM) Ayu. Medical College.
8. Dr. BP Tikehriha, Prof (Physiology), Ayu. Medical College.
9. Dr. Basant Sharma, Reader, Sharir Rachna, Ayu. College.
10. Dr. Leela Pandey, Reader, Sharir Kriya, Ayu. College.
11. Dr. SK Sharma, Reader, Swasthavritt, Ayu. College.
12. Dr. RN Tripathi, Reader, Kaya Chikitsa, Ayu. College.
13. Dr. SK Ahirwar, Reader, Shalya Chikitsa, Ayu. College.
14. Dr. N Satpute, Lecturer, Rog nidan, Ayu. College.
15. Dr. R Deewan, Lecturer, Kaya Chikitsa, Ayu. College.
16. Dr. G Ratre, Lecturer, Basic Principles, Ayu. College.
17. Dr. RP Gupta, Reader, Dravyaguna, Ayu. College.

### Experts consulted at Bengaluru

In Chair: Shri GN Srikantaiah, Director, Ayurveda

1. Dr. MA Jafri, Director, NIUM
2. Dr. Jaya Prakash Narayan, Vice President, CCIM
3. Dr. SM Angadi, Rtd. AYUSH Director
4. Dr. HT Srinivas, Joint Director AYUSH
5. Dr. Sumitra T Gouda, Professor, Govt Ayurvedic Medical College, Bengaluru
6. Dr. Ashalatha, Professor, Govt Ayurvedic Medical College, Bengaluru
7. Dr. Iqbal Memon, Principal, Govt Unani Medical College, Bengaluru
8. Dr. Nagendrayya, Professor, Govt Ayurvedic Medical, Bengaluru
9. Dr. BG Patil, Principal, Ayurvedic Medical College, Gadag
10. Dr. Srinivas Prasad, Principal Ayurvedic Medical College, Belgaum
11. Dr. PN Rao, Principal Ayurveda Medical College, Hassan
12. Dr. Navaneeth Prasad, MS Ramaiah Medical College, Bengaluru
13. Dr. KC Ballal, Former CCIM Member
14. JSD Pani, President, Indian Medicine Manufacturers' Association
15. Niranjan Murthy, Pentacare, Ayur Pharma, Hassan
16. Rajiv Vaasudevan, MD, Ayurvaid Hospital, Bengaluru
17. Dr. Bairesh, Ayurved Hospital, Bengaluru
18. Mr Shivakumar, Admin - Bengaluru
19. Vijay Paani, Ayurpark, Bengaluru
20. Dr Padmanabha Rao, Ayurveda practitioner

### Experts consulted at National Institute of Ayurveda, Jaipur

1. Prof. Ajay Kumar Sharma, Director NIA Jaipur
2. Prof. Mahendra Singh Meena, Professor & Dean
3. Prof. Abhimanyu Kumar, Professor & HOD of Bala Roga
4. Prof. Hemant Kushwaha, Professor & HOD of Shalya Tantra
5. Dr. K Shankar Rao, Associate Professor (Rasa Shastra)
6. Dr. Ram Kishore Joshi, Associate Professor (Kayachikitsa) & RMO
7. Dr. Hem Raj Meena, Assistant Professor (Sharir Kriya)
8. Dr. Yogesh Kumar Pandey, Lecturer (Kayachikitsa)
9. Dr. Vikas Bhatnagar, Lecturer (Sharir Rachana)
10. Dr. Ashok Kumar, Lecturer (Shalya Tantra)
11. Dr. Narinder Singh, Lecturer (Shalya Tantra)
12. Dr. Sri Prakash, Lecturer
13. Vd. Banwari Lal Mishra, Ayurveda Practitioner
14. Dr. Sahdev Arya, Ayurveda Practitioner
15. Dr. Rajesh Kotecha, Ayurveda Practioner

### Experts consulted at Jamnagar

1. Prof. MS Baghel, Director, IPGT&RA.
2. Prof. HM Chandola, Prof. & Head, Department of Kayachikitsa.
3. Prof. KS Dhiman, Prof. & Head, Department of Shalakyatantra.
4. Dr. KS Patel, Reader & Head, Department of Kaumarbhritya
5. Dr. AB Thakar, Reader Department of Panchakarma.
6. Dr. AR Dave, Reader Department of Kayachikitsa
7. Dr. Hitesh A Vyas, Senior Lecturer, Department of Basic Principles
8. Dr. BR Patel, Lecturer, Department of Dravyaguna
9. Dr. Rajgopal, Lecturer, Department of Kaumarbhritya
10. Dr. Shubhangi Kamble, Lecturer, Department of Basic Principles.

## Siddha

### List of Siddha experts consulted

### Central Govt officers

1. Dr. K Manickavasagam. Director I/c, National Institute of Siddha, Chennai
2. Dr. T Anandan, Director I/c, Central Research Institute, (S), Chennai
3. Dr. Saraswathy, Assistant Director, Captain Srinivasa Moorthy Research Institute, Chennai
4. Dr. C Anbarasi, Research Associate – Sri Ramachandra Medical University, Chennai
5. Dr. K Anbarasan, Assistant Medical Officer, Karur District
6. Dr. K Palanichamy

### State Govt. officers

7. Thiru M Chandrasekaran IAS., Director, Indian Medicine and Homoeopathy Department
8. Dr. G Ganapathy, Consultant NRHM Scheme, Chennai
9. Dr. S Ramalekshmi Ammal, Joint Director I/c, Indian Medicine and Homoeopathy Department
10. Dr. Kumar, State Drug Licensing Authority(IM)
11. Dr. V Tamilarasan – Drug Inspector / District Siddha Medical Officer
12. Dr. PM Krishna Kumar – Drug Inspector / District Siddha Medical Officer

### Academicians & Practioners

1. Dr. G Veluchamy (Former Director CCRAS)
2. Dr. P Jeyaprakash Narayanan
3. Dr. AM Abdul Kadher, Principal, Government Siddha Medical College, Chennai
4. Dr. Parthiban, Professor, Government Siddha Medical College, Chennai
5. Dr. Shaik Shahul Hameed, Principal, Government Unani Medical College, Chennai
6. Dr. N Manavalan, Principal, Government Yoga and Naturopathy Medical College, Chennai
7. Dr. FA Raja, Assistant Medical Officer (H), Government Kilpauk Medical College & Hospital Dispensary, Chennai
8. Dr. Venthamarai Selvi, Assistant Medical Officer, Arignar Anna Government Hospital of Indian Medicine, Chennai – 600 106
9. Dr. TR Siddique Ali, Chennai
10. Dr. L Shiv Kumar, Chennai

### Manufacturers

11. Thiru Ramanathan, Marketting Manager, Tampcol; Chennai
12. Dr. (Hakim) Syed Ameen
13. Thiru R Gunasekaran
14. Thiru Kannan
15. Thiru Vijay A Metha

### Siddha faculty members at the Siddha Medical College & Hospital, Chennai

1. Dr. Aruna
2. Dr. Siddique Ali
3. Dr. Venthamarai Selvi
4. Dr. Rani
5. Dr. Manimegalai
6. Dr. Saravana Devi
7. Dr. Geetha Devi
8. Dr. Shamim
9. Dr. Malliga
10. Dr. Meena Kumari

## Unani

### Experts consulted at CCRUM headquarters

In Chair: Prof. S Shakir Jameel, DG, CCRUM

1. Prof. S Khaleefuthullah,Vice President, CCIM
2. Prof. KMY Amin, Deptt. of Ilmul Advia, Ajmal Khan Tibbiya College, AMU, Aligarh
3. Hkm. SA Tamanna, Majeedia Hospital, Jamia Hamdard, New Delhi
4. Dr. Mohammad Yousuf, Former Dy Director, RRIUM, Srinagar, J&K

5. Hkm. Sirajuddin Ahmad, Proprietor, Drugs Laboratories, Meerut
6. Prof. Syed Zillur Rahman, Founder, President, Ibn Sena Academy, Aligarh & Former Dean, Faculty of Unani Medicine, AMU, Aligarh.
7. Prof. TA Siddiqui, Dean Faculty of Medicine (Unani), Jamia Hamdard, New Delhi
8. Hakim MS Usmani, Head, Department of Moalijat, A&U Tibbia College, Karol Bagh, New Delhi
9. Dr. Ahmad Yasin, Principal A&U Tibbia College, Karol Bagh, New Delhi
10. Prof. BS Usmani, Former Principal & HOD Kulliyat Dr MIJTUM College & HAR Kalsekar Hospital, Mumbai
11. Prof. Saad Usmani, Principal, Unani Medical College, Allahabad.
12. Prof. SM Ashraf, Former Chairman, Department of Moalijat, AKTC, Aligarh
13. Prof. Anis A Ansari, Dept. of Kulliyat, AMU, Aligarh
14. Prof. Jamil Ahmad, Former Dean, F/o Medicine (Unani), Jamia Hamdard, New Delhi
15. Hkm. Abdul Jabbar, A&U Tibbia College, Karolbagh, New Delhi
16. Hkm. Ghulam Mehdi, CCRUM, New Delhi
17. Dr. Mubashshera Begum, Chennai
18. Dr. B Habibullah, Chennai
19. Dr. Dilip Yadav, Unani Medical Officer Unani Dispendary, Raipur
20. Dr. FU Faruqui, Unani Medical Officer Unani Dispendary, Durg
21. Hkm. Zillur Rehman, Shifa Medicines, New Delhi

# 4

# Practice

# Practice


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# Practice of Ayurveda, Siddha and Unani Medicine

## Introduction and Scope

The practice of Ayurveda, Unani and Siddha medicine differs widely. It ranges from a single practitioner offering consultation from a solitary room to large multi-specialty hospitals where several consultants are engaged in offering a range of procedures.

Whether the practitioners are institutionally qualified or not, does not seem to matter to the public who seems to be guided by improvement of a condition as reported by relatives and friends or because nothing else has helped.

Hospitals/clinics and practitioners that have created websites and are able to correspond on e-mail get numerous visitors and patients from abroad, as well as relatively affluent Indians with the means to travel. But generally speaking patients come from the middle or working class of society.

ASU practitioners are by-and-large soft spoken and quiet, generally more comfortable conversing in Hindi or in the vernacular. Their patients do not ask too many questions about prognosis and treatment regimens, accepting the advice and medication on faith.

Some practitioners who started small, have grown in a span of just a few years to buy land and build their own 4 storey buildings inclusive of a residential unit for the family, *Panchakarma* facilities, a pharmacy for stocking medicine, a medical records section and private rooms for those willing to pay.

Whereas cleanliness, neatness and hygiene seem to matter enormously in some urban clinics, in other places the approach is quite casual. For patients who come through the website and e-mail route, hygiene, fresh air and greenery are important considerations. One of the challenges of widening access to ASU practice is to agree upon a standard level of cleanliness and the management of procedures offered, their duration and quality. In several clinics visited by the PI the practice area of private practitioners was generally cleaner than in several medical colleges which appeared to be in need of an injection of modern standards of housekeeping.

Most of the practitioners are fairly well organized about providing diagnosis and treatment and even small practitioners maintain the medical records of patients and the treatment and drugs administered. Quite a few practitioners, particularly from the south (and in the somewhat younger age group) handle their own mail promptly. But this is far from universal.

The number of OPD patients is an important indication of the popularity of the practitioner. It would be in the interest of propagating the spread of ASU, to build up a district and city-wise list of institutionally and non-institutionally qualified registered practitioners and to maintain it in a manner that can be accessed by the public. Today everything works on word-of-worth publicity. While there ought to be a disclaimer that such a compendium in no way guarantees the medical skills of the practitioner it would provide basic information about the credentials of the practitioners and the kind of ASU treatment offered.

The descriptions that follow are intended to give an idea of the medical conditions for which people access ASU practitioners and the degree of specialization that exists in the practice of traditional medicine. Since this is only the first part of the Report only an illustrative list of practitioners in some states has been included. In no way does it constitute the universe of treatment facilities or of practitioners.

The Principal Investigator was able to access information and personally visited many of the ASU practitioners mentioned in the following pages. This was due to invaluable assistance from a number of sources which was facilitated by the Health/ISM Secretaries of the states. In particular, unstinting support was given by the following:-

## Ayurveda

Directors/Commissioners of Indian Systems of Medicine in the states of Gujarat, Maharashtra, Karnataka and Kerala.

Dr. VV Prasad, Director, Rashtriya Ayurveda Vidyapeetha, New Delhi.

Dr. Ajay Sharma, Director, National Institute of Ayurveda, Jaipur.

Through them it was possible to visit a large number of hospitals, clinics and practitioners. Authentic information could also be collected by deputing research officers where required.

## Siddha

The Commissioner for Indian Medicine Shri Chandrasekhar accompanied the PI to the hospitals and private practitioners of Siddha medicine.

Dr. K Manickavasagam, Director I/c, National Institute of Siddha, Chennai, facilitated a number of meetings with private practitioners by inviting them to his office. The PI visited the clinics thereafter.

Dr. MA Kumar, Deputy Advisor, Department of AYUSH, Dr. Senthi Vel, Research Officer in CCRAS facilitated the collection of information as sought by the PI.

## Unani

The DG, CCRUM Prof. S Shakir Jameel facilitated 3 meetings with a range of Unani experts, including practitioners who were invited for discussions.

Professor M A Jafri showed PI the facilities and clinical practice in progress at the National Institute of Unani Medicine, Bengaluru.

The PI also visited large hospitals like Majeedia at Jamia Hamdard, Delhi, Tibbia College at Karol Bagh, Delhi and Unani dispensaries at Raipur, Chhattisgarh and Ernakulum in Kerala.

A practitioner from Majeedia Hospital was specially engaged to visit several places in UP and Haryana to give a first-hand account of practitioners in the region. Another research officer who belonged to Kashmir was asked to collect a first-hand account of Unani Practitioners in different districts of Kashmir.

# I. Clinical Practice in Ayurveda

## History of Clinical Practice of Ayurveda

### Ancient period

In ancient times there were two schools of Ayurvedic medicine: *Atreya Sampradaya* and *Dhanvantar Sampradaya*. *Atreya Sampradaya* dealt with medicine while *Dhanvantar Sampradaya* focused on the practice of surgery.

Both these schools had specialities like *Kayachikitsa* (Internal Medicine), *Shalakyatantra* (surgery and treatment of Head and Neck, Ophthalmology and Otolaryngology), *Shalyatantra* (Surgery), *Agadatantra* (Toxicology), *Bhuta Vidya* (Psychiatry), *Kaumarabhritya* (Paediatrics), *Rasayana* (science of rejuvenation or anti-aging) and *Vajikarana* (the science of fertility).

During this period, physicians practiced personalized medicine i.e. they minutely observed the constitution of the patient and the signs and symptoms in order to understand the severity of the disease and decide on the intervention to be made.

Many surgical and para-surgical procedures were practiced akin to Plastic Surgery (rhinoplasty), Cataract Surgery, puncturing to release abdominal fluids, extraction of foreign bodies, treatment of anal fistulas utilising the *Ksharasutra* technique, bone setting, conducting amputation and stitching wounds. It is said that Emperor Ashoka banned all surgical procedures as they were perceived to be cruel acts. Following this diktat surgeons lost their skill and with it the practice of surgery was almost wiped out.

In those times every physician maintained a small pharmacy, which was an essential part of his clinic. Fresh medicines were prepared according to the specific requirements of each patient and were dispensed from there. The medicines were mostly plant based but formulations containing animal products, minerals and metals were also administered for treating certain conditions.

### Pre-colonial period

Between the 10th and 12th centuries Muslim invasions took place particularly in Northern India. The Unani system of medicine came to India around the same time. The period saw enormous development of *Rasa-shastra* (organo-metallic preparations) as well as the development of the technique of pulse diagnosis.

With the advent of British rule and the introduction of western medicine, the practice of Ayurveda declined. None-the-less Ayurveda was preserved as a traditional "Science of life" and despite the expansion of western medicine and western-style hospitals a large section of the people continued to depend on the traditional systems. It was only after independence that the Government of India gave official recognition to the Indian systems of medicine.

### Modern period

Since the 1970s, Ayurveda has grown in many parts of the country and today its hospitals and practitioners are gaining wider acceptance. The production and marketing of Ayurvedic medicine has expanded accompanied by documentation of the benefits of the drugs. Ayurvedic treatment has become popular in many other countries both for wellness and rejuvenation. India is making renewed efforts to restructure Ayurveda as a functional and practical system of healthcare devoid of chemicals and their attendant side-effects.

Clinical practice in India is nonetheless dominated by the western allopathic system of medicine with heavy dependence on high-tech diagnostics and drugs. Initially allopathic practice was available exclusively for the elite class. Today most Ayurvedic doctors also prefer to practice in urban areas and cater to a captive clientele with greater dependence on packaged, bottled formulations and modern medicine drugs.

Even as interest in Ayurveda is growing, a question being asked is whether the allopathic system, with its emphasis on the curative approach, dependence on capital-intensive technology, invasive procedures, expensive drugs, can meet the basic health needs of the Indian population.

Many patients patronize modern medicine simply because it is the dominant system and because, the loss of productivity caused by illness can be reduced quickly.

A newer clientele is in search of a combination of both systems i.e. Allopathy and Ayurveda. They would like to avoid the use of chemicals and synthetic substances if possible. A combination of the two systems and drugs is a personal choice- as yet very few places offer a combination of Ayurveda and allopathy. The extent to which Ayurveda can offer a reliable and sustainable alternative to treat certain conditions has to be seen.

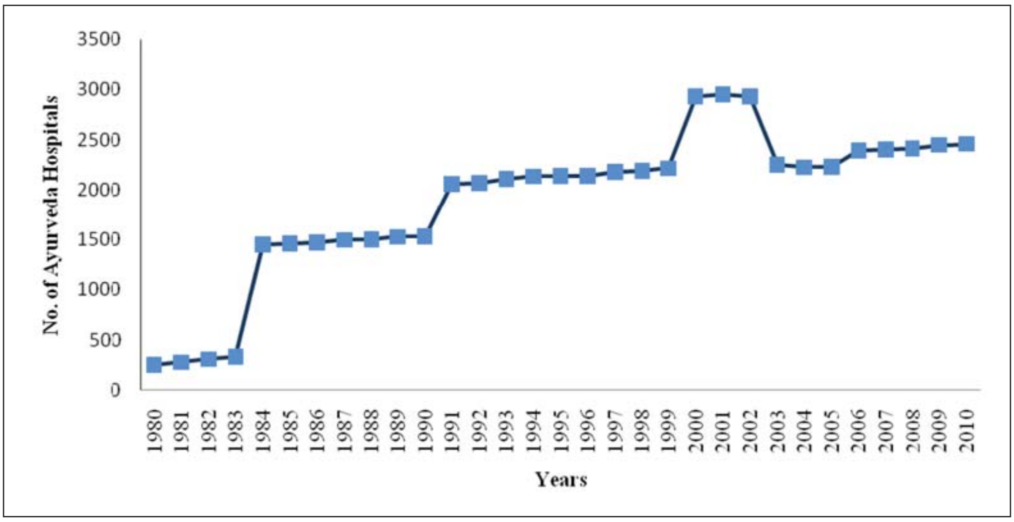
Currently, Kerala is one of the states in India that promotes practice of Ayurveda in a big way. This has been attributed to its well-established Ayurveda centers, skilled practitioners and availability of medicinal plants that abound in the Western Ghats that run through the state. There are many Ayurvedic centers (known as Vaidyashalas) all over Kerala and these are perhaps, the best examples of Ayurvedic practice in India. No other state has the live tradition of Ayurvedic practice as in Kerala.

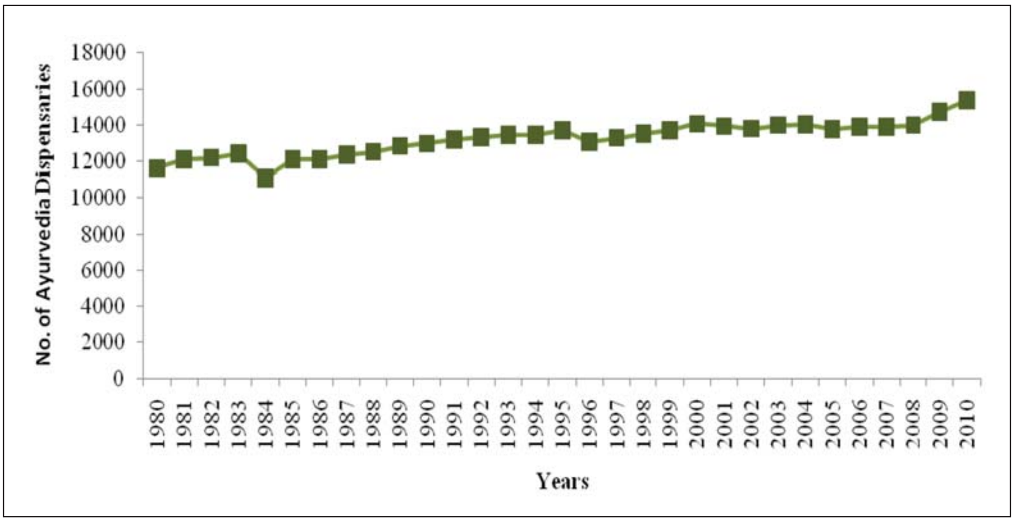
Ayurvedic clinical practice may be categorized broadly into two i.e. 1) Practice in the Government setup and 2) Practice in the Private setup. Different sub-categories of each sector are described below:

## Ayurveda Practice in Government Health Care Facilities

There has been a significant increase in AYUSH facilities offering clinical treatment over the years.

According to the latest figures (AYUSH in India, 2010) India has 2,458 Ayurvedic hospitals with 44,820 beds and 15,353 Ayurvedic dispensaries. There are 4,78,750 Ayurveda practitioners as on 1.4.2010. Source: http://indianmedicine.nic.in/writereaddata/linkimages/8786199854-Summary%20Part-I.pdf (accessed on 1.8.2011). While most of these hospitals are spread over 29



States and Union Territories, Uttar Pradesh itself accounts for nearly three quarters of the Ayurveda hospitals in the country. The number of government hospitals offering Ayurvedic clinical facilities, increased substantially in the years 1983-84, 1990-91 and 1999-2000, which was followed by a sharp decline between 2002-2003 which is presently plateauing out.

The numbers of Ayurvedic dispensaries have grown steadily from the year 1980 and show an upward growth trend.

In order to promote postgraduate education, specialized healthcare and research facilities in Ayurveda, the Government of India is also setting up an All India Hospital and Research Institute for Ayurveda in New Delhi, on the lines of the All India Institute of Medical Sciences (AIIMS).

In this section an attempt is made to describe different levels of service delivery in Government facilities. This is not an exhaustive account of the whole country but rather a bird's eye view of what happens at different levels of practice and the conditions under which preventive care as well as treatment are being given. The places mentioned in the Report were seen by the PI during her visits or recommended to her for inclusion by reliable persons in the National Institutes, the state governments and the Director of Rastriya Ayurveda Vidyapeetha, Delhi. They depict a cross-sectional view of the status of ongoing practice.

## 1. Government dispensary

### Ayurvedic dispensary in Tekari village, Raipur

The Ayurvedic dispensary in Tekari village, Raipur offers consultation and dispenses basic drugs. The sustained availability of a qualified Ayurvedic practitioner and drugs was stated to be a recurring challenge.

Names of management committee members displayed at the dispensary

Ayurvedic Dispensary Tekari village, Raipur.

Medicines at the dispensary

Health awareness banner near the dispensary

Health awareness messages near the dispensary

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| OPD | Average daily attendance - 35 patients |
| Treatment | Mainly respiratory diseases; followed by digestive problems and skin problems. |
| Other information | Raw drugs from the dispensary's herbal garden are often used along with bottled drugs. |
| Suggestions | A comprehensive set of guidelines on what a government dispensary should provide are needed. At least one model dispensary should be there in every district to act as a model for others to follow. The local purchase of drugs has to be facilitated so that there is no let-up in treatment. To avoid financial hassles, payment can be made by the District Ayurveda Officer with a tie-up with a local drug supplier. |

## 2. Hospital with Ayurveda OPD and Panchakarma facility

### Ayurveda Wing, District Hospital, Durg, Chhattisgarh

The Ayurveda Wing in the hospital provides free consultation and *Panchakarma* (purification and detoxification).

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| OPD | Average daily attendance - 50 patients |

Patients waiting in the Ayurvedic unit, District Hospital, Durg

Patients undergoing *Panchakarma* procedure at the District Hospital, Durg

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| Treatment | Mainly arthritis and neurological disorders; followed by digestive and skin disorders. About 500-600 patients every month seek *Panchakarma* treatment.[1] |
| Suggestions | The Panchakarma units are generally very crowded with several patients undergoing therapy in one room. The in-charge of Panchakarma units need to follow a rule-of- thumb about the number of patients that can avail of treatment at a time and to stagger the timings to avoid congestion . This has a direct effect on the maintenance of hygiene and attention given to each patient. |

## 3. Specialty hospital

### Government Ayurveda Research Institute for Mental Diseases, Kottakal, Kerala

Established in 1974, the Government Ayurveda Mental Hospital located in Malappuram district in Kerala provides out patient and in patient services for mental disorders. It is the only such hospital exclusively providing services for mental health and receives patients from Kerala as well as from neighboring states.

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| OPD | Average daily attendance - 30 patients |
| IPD | Average number of patients treated in indoor facility each year – 250 |
| Treatment | Anxiety disorders, depression, obsessive disorders, mood swings, insomnia, epilepsy and schizophrenia are treated. |
| Other information | All types of *Panchakarma* procedures are performed at the hospital. The government owned manufacturer of Ayurvedic medicine supplies drugs. Most of the patients come to this hospital after undergoing non-Ayurvedic treatment elsewhere. The hospital claims an improvement of varying degrees in 60 percent of cases. |
| Suggestions | There is a need to strengthen this hospital and to modernize it. It should become a centre for Ayurvedic treatment of mental disorders and should provide information on doctors/treatment and private board and lodging for families of patients. |

Government Ayurveda Research Institute for Mental Diseases, Kottakal, Kerala

1. *Panchakarma* therapy practices here includes *Purvakarma* (oil massage & steam therapy) and *Pradhankarma* (purificatory measures). *Nasya* (nasal medication) & *Bastikarma* (enema therapy) are commonly performed followed by the *Shirodhara* (pouring of medicated oil on forehead) procedure. *Snehan* & *Swedan* procedure including *Sarvangsneha*n (whole body massage); *Nadi Sweda* (localised steam therapy); *Patrapinda Sweda* (body fomentation using different leaves) and *Sarvang Sweda* (whole body steam) are also performed.

## 4. Ayurveda hospitals in teaching institutes

### National Institute of Ayurveda (NIA), Jaipur, Rajasthan

Established in 1976 by the Government of India, the National Institute of Ayurveda was set up as an apex institute to promote the growth and development of Ayurveda. It does this through teaching graduates and post-graduates in all branches of Ayurveda; conducting research and by providing quality medical care through the Ayurvedic system of medicine. NIA is affiliated to Rajasthan Ayurveda University, Jodhpur.

NIA has a 354 bedded hospital and separate clinical departments that include *Kayachikitsa* (General medicine), *Panchakarma, Balroga* (Paediatric), *Shalya* (Surgery), *Shalakya* (ENT & Eye disease), *Stri Roga* (Obst. and Gynaecology). Each of these departments operates an independent OPD and IPD.

Patients in O.P.D and *Kayachikitsa* (medicine) ward at N.I.A., Jaipur

Consultation in Progress at N.I.A., Jaipur

Patient undergoing steam therapy at *Panchakarma* unit

View of Leech therapy

Cerebral palsy patient under treatment at *panchakarma* unit.

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| OPD | Average daily attendance 500 patients |
| IPD | Average number of new patients treated in indoor facility each year 2500 |
| Speciality clinics | Diabetic Clinic<br>Geriatric Clinic<br>Dietary Clinic<br>Child Mental Health Clinic<br>Allergy Clinic. |
| Facilities offered | • 24 hours primary Emergency Unit equipped with oxygen facilities and life saving drugs.<br>• Eye disorder clinic for eye diseases is run in collaboration with Sreedhareeyam Ayurvedic Eye Hospital & Research Centre, Kerala. While the average daily patient attendance is 40 to 50, it goes up to 100 patients a day when the Chief Physician from the Sreedhareeyam Ayurvedic Eye Hospital visits the hospital.<br>• A large *Panchakarma* Unit with separate private rooms where 200 patients undergo different procedures on a daily basis.<br>• Centre for Musculoskeletal Disorders working in collaboration with Vaidyaratnam Oushadhasala, Thrissur. |
| | • A child mental health unit<br>• A pharmacy that produces 150 types of Ayurvedic medicines for use of the hospital.<br>• Advanced Ayurvedic Clinical Documentation Programme launched in collaboration with the Institute of Advanced Research at Coimbatore. |
| Suggestions | NIA Jaipur should become a showpiece for visitors to Jaipur in case they wish to see authentic Ayurveda and Panchakarma treatment in progress. The surroundings are neat and clean and the general atmosphere is efficient. The website should be vastly upgraded and regularly updated to be managed by a Programmer with a Master in Computer Application. The website should become a focal point for accessing information on Ayurveda, medicinal plants and different kinds of treatment and should be interactive. All members of the faculty need to be trained to oversee updation of material. This website should become the most credible source of information on Ayurveda along with FAQ'S and links to all important hospitals/Centers of Ayurvedic Practice. |

## Government Ayurveda College, Tripunithura, Kerala

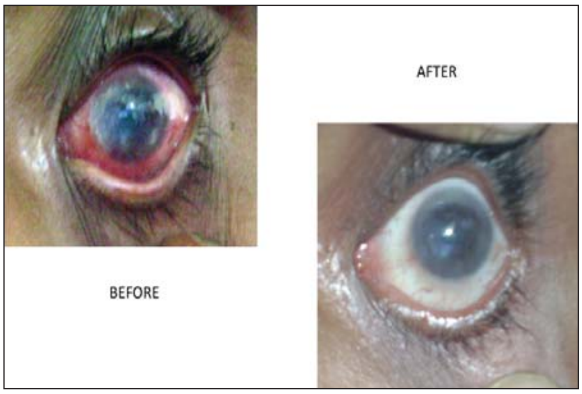
Hospital complex – Government Ayurveda College, Tripunithura, Kerala

Founded in 1926, the Government Ayurveda College, Tripunithura, Kerala presently has 14 teaching departments, a 500 bedded hospital, six departmental OPDs, eight special clinics and a medicine manufacturing unit that produces all medicine required by the hospital.

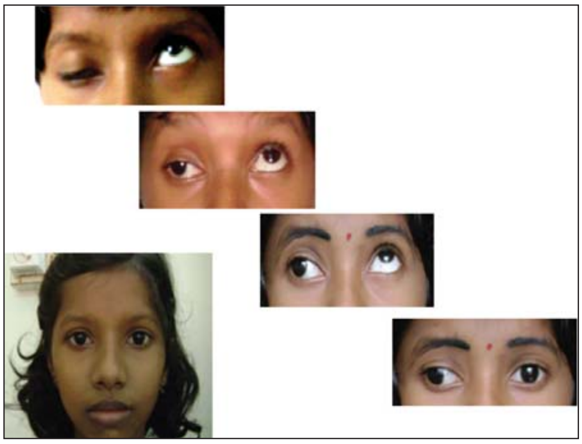
*Shalakya* Department (Eye & ENT) is equipped with modern diagnostic equipment and is renowned for Ayurvedic management of various eye and ENT disorders. In particular, treatment is available for the following diseases:

- Refractive errors and allergic disorders
- Corneal diseases, Retinal degeneration and dry eye syndrome.
- Facial palsy, Hearing loss, Meniere's disease, Otitis media, Vertigo.
- Headache, Sinusitis, Migraine, Alopecia, Dandruff, Allergic Rhinitis etc.

### Photographs of treatment executed by the *Shalakya* department




Sirasuklam Treatment



Unilateral Ptosis (Right) Treated in the Shalakya Department

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| Number of cases treated in the Eye Unit in 2010 | Diseases of Drishti (visual problems) - 3674<br>Diseases of Sarvakshi (whole eye) - 1804<br>Diseases of Vartma (Eye Lids) - 589<br>Diseases of Krishnamandala (Cornea) - 450<br>Diseases of Sandhi (junctional parts of eye) - 280<br>Diseases of Suklamandala (Sclera ) - 377 |
| Number of cases treated in 2010 in ENT, Head & Neck | Karnarogas (Ear) - 2881<br>Nasarogas (Nose) - 1597<br>Sirorogas (Head & neck) - 1907<br>Mukharogas (oral cavity) - 1444 |

*Shalya Tantra* (Surgery) Department is divided into two units: *Ksharsutra* (for management of fistula-in-ano) and *Arbuda* (Cancer treatment).

Cases commonly treated at the *Shalya Tantra* Department include:

- Low backache, Ulcerative Colitis, Varicose Veins.
- Paraplegia, Hemiplegia, Quadriplegia, Epidermolysis Bullosa.
- Rheumatoid arthritis, Ostioarthritis, Venous Ulcer, Varicose Ulcer.
- Vascullitis, Liver diseases, Systemic lupus Erythematosus.

Number of cases treated in the *Shalya Tantra* department

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| OPD | Average daily attendance - 50 patients |
| IPD | Average of 4849 patients treated per year |
| Ano Rectal Cases | An average of 335 patients treated per year |

*Arbuda* Unit (Cancer treatment unit)

Various types of Ayurvedic cancer treatment is provided in this hospital. Predominant among these are Ca Rectum, Ca Breast, Ca Tongue, Ca Prostate, Ca Lung, Chorionic Carcinoma, Osteosarcoma and Ca Maxilla.

Non healing ulcer & Tongue cancer patient under treatment at *Shalya* Department

*Panchakarma* Department treats a variety of diseases. It however specializes in treating Motor Neurone Disease for which a specific line of treatment is not generally available.

*Keraleeya Bala-chikitsa* (Pediatric practice)

Some of the important childhood diseases treated include

- *Balapeeda* - Persistent crying, restlessness, diarrohea, vomiting, breast feeding, Apasmar (Epilepsy), Congenital disorders, Marasmus (Emaciation) and Muscular dystrophy
- *Karappan* – All skin diseases

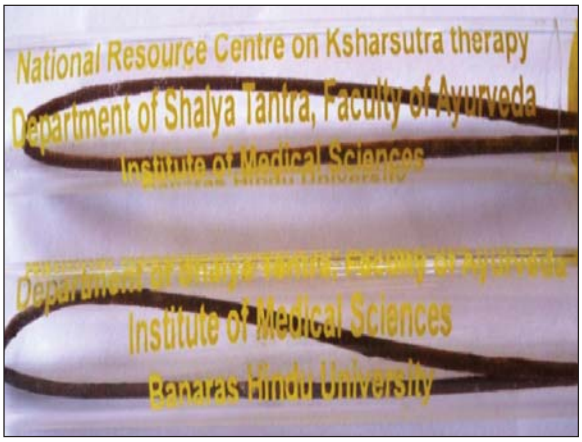
## Sir Sunderlal Hospital, Banaras Hindu University, Varanasi, Uttar Pradesh

Established in 1924, the 96 bedded Sir Sunderlal Hospital in the Banaras Hindu University (BHU) is an integral part of the Institute of Medical Sciences where both the faculties i.e. Faculty of Medicine and Faculty of Ayurveda function collaboratively.

## Speciality practice in Shalyatantra (Surgery) department

Shalyatantra department has speciality clinics for Ksharsutra and diabetic wound management.

View of Ayurvedic OPD and IPD (*Kayachikitsa* Department) at BHU




*Ksharsutra* Therapy

Application of *Ksharsutra* in progress

## Ksharsutra therapy

*Ksharsutra* Therapy is one of the specialized and well known therapies used by Ayurvedic practitioners for the treatment of Fistula-in-ano. *Ksharsutra* is a medicated thread prepared by using plant based ingredients. The thread, when applied by an expert helps in cutting, draining and healing of the fistulous track. A number of scientific studies confirm that the drugs used in the preparation of *Ksharsutra* along with the mechanical pressure of tying the thread heal the fistulous tract gradually.

### Advantage of Ksharsutra therapy

*Ksharsutra* treatment is a minimally invasive surgical procedure. It can be done without anesthesia. Patients can continue with their normal routine work and the presence of the thread does not bother them.

## Diabetic wound management

### Management of Diabetic foot ulcer and other infected wounds using Ayurvedic drugs

More than 50,000 limb amputations are carried out in India annually for the treatment of diabetic foot ulcer. Despite antibiotic therapy, the wound does not heal and doctors have to amputate the affected limb.

Ayurveda, apart from controlling blood glucose levels, is reported to manage diabetic foot ulcers[2] with only good wound care. Ayurvedic drugs are very effective in wound debridement. By healing

A patient of Diabetic foot ulcer

Day –1

Day – 180 Wound healed completely

2. Photographs shown above were supplied by Dr. Manoranjan Sahu, Professor at BHU and former Director, All India Institute of Ayurveda, Delhi.

the wound, it helps to prevent limb amputation. These drugs are locally available and cost effective.

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| Other Clinics Specialty | • *Garbhini Vishistha Paricharya* (Pregnancy care)<br>• *Baal Swasthya* clinic (child health),<br>• *Infertility* clinic<br>• *Twaka Roga* (Skin speciality)<br>• *Hridaya Roga* (Cardiac clinic)<br>• *Udara Roga* (Abdominal disease)<br>• *Yakrit Roga* (Liver disorders)<br>• Geriatric Clinic<br>• *Vedanahar* Clinic (Pain management). |
| OPD | Average daily attendance 220 patients |
| IPD | An average of 3844 patients treated per year |
| Suggestions | This hospital and its service needs to be showcased for interested visitors as the clinical material is plentiful and it is possible to view the difference that Ayurveda can make. A visit to this hospital should become a compulsory feature of exposure visits planned for undergraduates studying in Northern Indian Ayurvedic medical collages. |

## Tilak Ayurveda Mahavidylaya, Pune, Maharashtra

Founded in 1933, the oldest Ayurveda Mahavidyalaya in Pune, renamed 'Tilak Ayurveda Mahavidyalaya' has produced 8000 under-graduates and 1100 post graduates since inception. A Maharashtra state government aided institute, it is affiliated to the Maharashtra University of Health Sciences, Nashik.

Attached to the institute is the 340 bedded **Seth Tarachand Ramnath Charitable Ayurveda Hospital** which provides health services to the lower income group. While a majority of patients are treated with Ayurveda, a small percentage is also given allopathic treatment in emergency situations.

Seth Tarachand Ramnath Charitable Ayurveda Hospital, Pune

*Shalakya* (ENT) OPD

Oil massage & steam therapy under process in *Panchakarma* department

Bloodletting therapy performed at the hospital

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| OPD | Average daily attendance - 450 patients. |
| IPD | Average bed occupancy in I.P.D. is about 70 % |
| *Panchakarma* | An average 50,000 procedures are performed every year. |
| *Shalya* (Surgery) | 315 major and 543 minor procedures were performed last year. |
| *Shalakya* (Eye & ENT) | Last year 355 major and 87 minor procedures were performed in the Department. |
| *Striroga* (Gynaecology) | 616 deliveries, 469 major procedures and 264 minor procedures were performed last year. |
| *Rognidan* (Pathology) | 47,915 patients utilized services last year. |
| Suggestions | This hospital should be showcased for students to see authentic Ayurveda treatment. Students of Ayurveda particularly from western India should be given exposure to this hospital which has plenty of clinical material. However there is a need to modernise the interiors. |

## Chaudhary Brahamprakash Ayurveda Charak Sansthan, Delhi

Chaudhary Brahm Prakash Ayurveda Charak Sansthan is a 210 bedded Ayurved hospital and teaching institution established by the Government of NCT Delhi. Operational from Dec., 2009, it draws patients from Delhi and neighboring states.

Ch. Bramhaprakash Ayurveda Charak Sansthan, Delhi

Patients at OPD wing of the hospital

View of IPD

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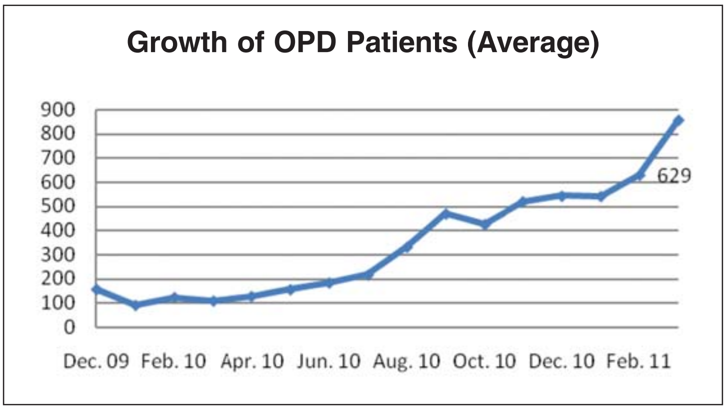
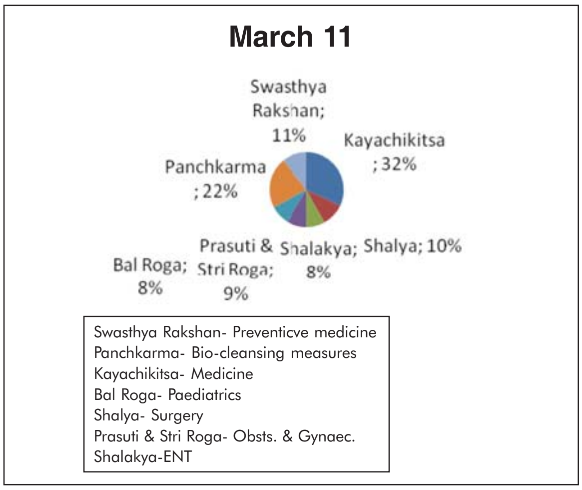
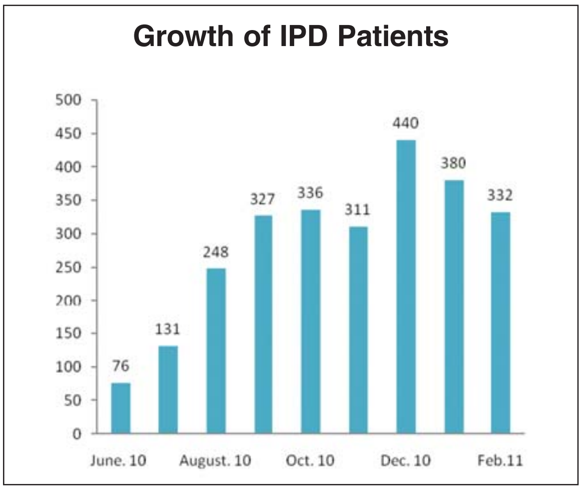
| OPD | Average daily attendance – 800 patients |
| IPD | 2981 patients treated since June, 2010. |
| Other Information | 1,28,559 patients have been treated at the hospital in one year. About 3000 patients from other states have visited the hospital for consultation. Bed occupancy rate in March was about 72 percent. Approximately 250 patients from outside Delhi have been treated in the Indoor Patient Facility. |




Distribution of patients consulting various OPD




A number of chronic and complicated cases are treated at the hospital on a daily basis.

a. Treatment of Visarpa (Cellulitis) over a two month period

Before treatment

After treatment

b. Treatment of Mansarbuda (Benign Mesenchymal Tumour) over a 15-day period

Swelling and pus before treatment (Temporal region)

After Ksharasutra treatment

## All India Institute of Ayurveda, New Delhi

The All India Institute of Ayurveda (AIIA) was conceived of as an apex institute for Ayurveda under the Ministry of Health & Family Welfare, Department of AYUSH, Government of India.

The Institute, which is presently under construction will eventually offer postgraduate and doctoral courses in various disciplines of Ayurveda. It expects to focus on fundamental research in Ayurveda, drug development, standardization, quality control, safety evaluation and scientific validation of Ayurvedic treatment. Scheduled to be functional by 2013 the Institute will have a 200 bedded referral hospital for facilitating clinical research.

Currently, a temporary OPD block consisting of 5 clinics, a laboratory, a *Ksharasutra* therapy room, a pharmacy and a committee room are operational. From October 2010 to February 2011, 9250 patients visited the hospital OPD.

AIIA is implementing the national campaigns for Anaemia, Mother and Child Health, Geriatrics and *Ksharasutra* under the Department of AYUSH.

## Suggestions

The hospital needs to have a strong full time Chief Executive Officer in its initial stage to oversee infrastructural development and also to network with other institutes in the field of Ayurveda as well as other disciplines. At this stage it would be better to position a non-practitioner as there is a huge need for attending to lateral linkages with several agencies. The All India Institute of Medical Sciences and Indian Council of Medical Research have full time Deputy Directors of Administration, who are IAS officers of Joint Secretary Level. That is vitally needed here at this juncture as there is a big need to look at infrastructure development, engagement

Under construction building of AIIA, New Delhi.

Temporary OPD block

of faculty and the formulation of educational and research priorities for the next five years.

The present mandate of the Institute appears to be similar to the CCRAS. The institute in its formative years should somewhat focus on multi-disciplinary research in which collaboration with modern medicine institutes is fostered. The institute can play a far more meaningful role by facilitating collaborative studies to observe the comparative efficacy of Ayurvedic and allopathic treatment after following a carefully designed protocol. By studying the outcomes of cases treated purely under Ayurvedic treatment and comparing results with similar patients treated under conventional medicine, the relative merits and demerits of Ayurvedic treatment can be evaluated.

In the initial years the institute should exclude areas like fundamental research and drug standardization on which extensive work has been done by others. Instead is should focus on patient care and evaluation of the outcomes of holistic Ayurvedic treatment. Otherwise it might become a duplication of research work which has been extensively described in the Chapter on Research.

## 5. Clinical units of research organizations

### Clinical Unit of Central Council for Research in Ayurveda and Siddha (CCRAS), Safadarjung Hospital, New Delhi

| | |
|---|---|
| OPD | Average daily attendance – 100 patients |
| Treatment | Predominately Arthritis |
| Other information | OPD services are run by retired government doctors and regular doctors from the CCRAS. |

| | |
|---|---|
| Suggestions: | A collaborative project to compare outcomes should be initiated to evaluate patient responses before and after treatment. The assessment should be done by an independent multi-disciplinary group to avoid bias. |

## Ayurveda Practice in the Private Set-up

Private practice in Ayurveda is not uniform all over the country. While private practitioners in Ayurveda are very popular in states like Kerala and Maharashtra, they are not as much in demand in other states, for their knowledge of Ayurveda. Even so, some corporate hospitals are investing in Ayurveda treatment that is integrated into the modern set up. The examples described in this section of the report are intended to represent the cross section of practice that is going on. Inclusion or exclusion of a practitioner does not denote any effort to show anyone in a favorable or unfavorable light. It is only expected to give an idea of different levels of practice in general as well as specialized areas. In no way, is this an exhaustive accent of the practices conducted throughout the country.

## Different Levels of Private Practice

### 1. Individual Practitioners

#### a. OPD Consultation only

Many graduates and post graduates of Ayurveda are engaged in individual private practice offering only consultation and mainly located in urban areas. They are both institutionally qualified or not

so but they are registered on the Register of the Central Council for Indian Medicine (CCIM).

### *Ayurvedic clinic of Vaidya Triguna, Delhi*

Ninety year old Vaidya Brihaspatidev Triguna and his son Vaidya Devendra Triguna are renowned Ayurvedic physicians in Delhi practicing *Nadi Marma Gyana* (knowledge about pulse). Most patients come to their clinic by word of mouth publicity.

Vd. Brihaspati Dev Triguna, examining a patient by *Nadi Pariksha* in his clinic

Patients waiting at Triguna's clinic

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is around 250 patients. |
| Treatment | All kind of disorders ranging from common afflictions to chronic diseases are treated here. |
| Treatment method | Patients are diagnosed by the *Nadi Pariksha* technique. |
| Medicines used | Medicines dispensed from Triguna's own dispensing unit. |

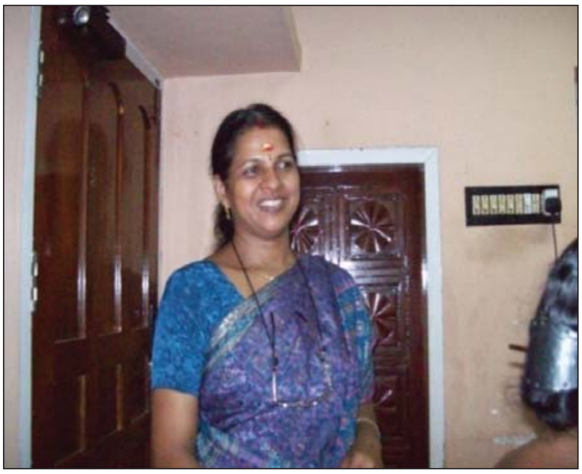
### *Shukla Ayurvedic Clinic, Jamnagar, Gujarat*

89 year old Vaidya CP Shukla is a well known qualified Ayurveda Physician in Jamnagar, Gujarat. He is a retired professor and was Head of Department, Kayachikitsa at the Institute of Post Graduate Teaching and Research in Ayurveda, Jamnagar. After his retirement in 1982, he started his own clinic in Jamnagar. Patients from all over Gujarat and other parts of India come to his clinic for consultation.

| | |
|---|---|
| Number of patients | The average daily attendance in the OPD is around 30-40 patients. |
| Treatment | Neurological disorders, metabolic disorders like diabetes, obesity, digestive disorders, skin diseases and various chronic cases are treated in his clinic. |
| Medicines used | No market preparations are used. Only classical drugs and medicines prepared in his clinic are prescribed to patients. |

### *Sowparnika Ayurnikethan, Poonkunnam, Thrissur, Kerala*

Dr. Sushila Saji, a professionally qualified Ayurveda practitioner has been treating complicated cases coming from Kerala and abroad in a rudimentary set up. Most of the patients come to the centre after taking conventional medicine. Medicines from a specific manufacturing of Ayurvedic medicine are used in her practice.



Dr. Sushila Saji at her clinic

Patient from the Gulf treated at Sowparnika Ayurnikethan centre inviewed by the PI

b. OPD and *Panchakarma* Unit

Most Ayurvedic private practitioners come under this category. *Panchakarma* treatment is popular at these centers. However, many of these *Panchakarma* clinics operate from one room due to non availability of space.

*Maulsiri Ayurvedic Clinic and Research Centre, Jaipur, Rajasthan*

Dr. Sahdev Arya (MD) runs the Maulsiri Ayurvedic Clinic and Research Centre in Jaipur. The centre is

Maulsiri Ayurvedic Research Center, Jaipur

Patient treated at Maulsiri Centre for facial hair growth

known for the management of chronic disorders. Separate *Panchakarma* treatment rooms for male and female patients are available. All Panchakarma procedures including *Vaman* (vomiting), *Virechan* (purgation), *Abhyanga* (oil massage), different *Basti* and Keraliyan *Panchakarma* procedures are performed here.

| | |
|---|---|
| Number of patients | The average daily attendance in the OPD is around 30-40 patients. |
| Treatment | Coronary artery disease, hypertension, Stress related disorders, liver disorders, slipped disc, spinal disorders, migraine, skin diseases, allergies and asthma. Cosmetic therapy is also offered at the Centre. |
| Medicines used | Medicines of Vaidyaratnam Pharmacy, Kerala are used in this clinic. |
| Other information | The PI found that a section of the patients were from the affluent and educated class and were explicit in describing the difference that Ayurveda had made. Recording are available. |

*Chakarapaani Ayurveda Clinic and Research Centre, Jaipur, Rajasthan*

Chakrapani Ayurveda Clinic & Research Centre, spread across 8000 square feet, is promoted as an Ayurveda Wellness Centre. Listed in the Lonely Planet, it has an ISO 22000:2005 certification and Organic Certification from agencies approved by the Rajasthan Government. The clinic caters to Indian as well as tourist groups from overseas.

It has a significant online presence for promoting the Centre, Ayurveda and Ayurveda products. It operates **55 websites promoting Ayurveda;** operates online training programmes on Ayurvedic medicines and herbs and describes treatment for intractable conditions. The clinic engages in online sale of Ayurveda products such as tablets, capsules, beauty products, oils, health tonics and *Panchakarma* equipment.

It was unusual to see a large number of web designers and Programmers having been engaged for updating all the websites.

Chakrapani Ayurveda clinic, Jaipur

*Udvartan*-Herbal powder application over the body at the centre

| | |
|---|---|
| Number of patients | The average daily attendance in the OPD is around 40-50 patients. About 20-25 patients undergo *Panchakarma* procedures every day. |
| Treatment | Obesity and lifestyle-related disorders, diabetes, stress-related problems, skin disorders are treated here. "Beauty treatment" is also available. |

The clinic offers a number of "Packages "and some of these are given below to illustrate how Ayurveda is being packaged/remodelled to suit modern needs.

### Treatment Packages

- Stress Management Package
- Rejuvenation Package (*Rasayana Chikitsa*)
- Purification Therapy (*Shodhana Chikitsa*)
- Longevity Therapy & Immunity Promotion (*Kayakalp Chikitsa*)
- Weight Loss (Slimming Programme) Therapy
- Beauty Care Package
- Frequent Traveler's Package
- Executive's and IT Professional's Package
- Spine and Neck Care Programme.

Note: Many of these packages are directed forwards modern life style related problems and are aimed at attracting a specific kind of clientele.

### Ayurveda Learning Programmes

- Online Courses: According to the Center, around 500 students have taken the online course till now and customized in-house training programmes are also available. Till date, more than 2000 students have studied Ayurveda at the Centre.
- Ayurveda Centers and product distributors have been established in the US and other countries.

Note: This shows how the entrepreneur/practitioner has attempted to fill a gap that exists between what a newer clientele is seeking and what is generally offered.

### Web Activities

- The clinic has about 80 domain names with 55 operational websites and 25 under construction.

Note: The clinic is making maximum use of information technology which accounts for websites of a private clinic receiving maximum hits globally.

This is a new approach and well suited for attracting a different clientele towards Ayurveda, particularly for promoting Wellness and Rejuvenation therapies and basic learning about the Ayurvedic system of medicine. The PI requested the Director, NIA, Jaipur who had accompanied her to introduce innovative web-based approaches in NIA with approval of the Governing Body, as obviously there is great interest abroad.

## *Yashaswi Ayurveda, Ahmedabad, Gujarat*

This one room *Panchakarma* clinic in Ahmadabad carries out all the Panchakarma procedures on patients with chronic disease. Situated on the third story of a building in a busy part of the city did not deter family members from bringing patients of stroke and paralysis for treatment.

*Panchakarma* set up in one room

c. OPD and *Panchakarma* Unit with Indoor facility

*Ayurvijnana Chikitsalaya, Pune, Maharashtra*

Ayurvijnana Chikitsalaya is run by Vaidya, Santosh Suryavanshi. In addition to the OPD, there is a six bedded Indoor facility. It has separate *Panchakarma* facilities for male and female patients along with a separate kitchen to prepare meals according to directions of the treating physician. All the *Panchakarma* procedures including *Vamana* (Vomiting therapy), *Virechana*, *Nasya*, leech therapy as well as the Keraliyan *Panchakarma* procedures are performed in the clinic.

| | |
|---|---|
| Number of patients | The average daily attendance in the OPD is around 30 patients |
| Treatment | Patients suffering from Musculo-Skeletal diseases are among the user of the clinic followed by digestive disorders, infertility, skin diseases and stress disorders |

The President of India, the then Governor of Rajasthan at the centre in September 2005

*Swedana* (steam) unit

## 2. Specialty Practice Under Ayurveda

### a. Cancer treatment center through Ayurveda

*VCP Cancer Research Foundation, Dehradun, Uttarakhand*

Vaidya Balendu Prakash, is well known for treating cancer patients for the last 35 years. He operates an O.P.D and an eight bedded hospital in Dehradun. He uses *Rasa-Chikitsa* (Mercury based preparations) for the management of cancer patients.[3]

His work has been presented to a panel of researchers and clinicians convened by the Office of Cancer Complementary and Alternative Medicine, National Cancer Institute, USA where cases of cancer patients in India treated with metal-based Ayurvedic treatment (MBAT) formulations were discussed.

Nearly 50 percent of the inquiries are from abroad especially from Saudi Arabia and countries like Croatia.

3. *Rasa-Chikista* uses compounds made up of plants, animal products, and metals like mercury, gold, silver, copper, iron, tin, lead, and zinc. The Ayurvedic compounds are created through a "tedious method of preparation" of grinding, heating and combining the various compounds that can take 2-3 years to complete for each batch. The treatment may last up to 5-7 years.

| | |
|---|---|
| Number of patients | While the Center receives nearly 20 new inquires for the treatment of different kinds of cancer every day, those cases which do not fit within the domain of past experience are refused. |
| Treatment | The center treats patients suffering from leukemia, lymphoma and myeloma. Metastatic cancer patients are also treated to improve their quality life. In addition, pancreatitis, colitis, arthritis, dermatitis, hepatitis metabolic disorders like obesity, diabetes, migraine, multiple sclerosis and immunological disorders are also treated. |
| Special observation | Dr. Balendu's practice has been acknowledged at different places in the world. He speaks with confidence and can argue with scientists and allopathic doctors armed with diagnostic pathological parameters. This is unusual among ASU practitioners, and he should be encouraged. |

## b. Hair Care and Cosmetic Centre

### *Dr. Illa's Ayurvedic Hair Care Clinic, Ahmedabad, Gujarat*

Dr. Ilaben C. Shah has started an Ayurvedic Hair care Clinic in 1978. Ayurvedic treatment is offered for the hair, skin and body. Around 4000 patients are treated annually at the center for hair and beauty treatment. The Clinic has branches in Gujarat and Maharashtra.

Patient treated at Center for Alopecia

| | |
|---|---|
| Number of patients | The average daily attendance in the OPD is around 20 patients. |
| Treatment | Patients with all types of hair loss ranging from alopecia areata to alopecia totalis, and dandruff seek treatment. |
| Medicines used | Drugs are prepared by the clinic's own pharmacy. |

## c. Stress Management and Mental Disorders (*Manas Rog*) clinic

Dr. Tom Paul is a professionally qualified Ayurvedic practitioner with a post graduate diploma in Addiction, Counseling and Psychotherapy. He practices *Manas Roga* using Ayurveda and is based in Ernakulum district of Kerala. He has treated almost 5,223 patients of *Manas Vyadhi* last year. While a majority amongst them was suffering from psychosomatic disorders, he also treats patients suffering from depression, anxiety, and schizophrenia and alcohol dependency.

His treatment includes *Yukti Vyapasrayam*(medical management), *Shodhana* (Purification of the body by bio-cleansing measures), *Shamana* (Pacification), *Daivavyapasrayam* (Spiritual Healing), *Satwavajayam* (Psychotherapy/ Counseling), observation, communication, intervention followed by Yoga therapy, relaxation therapy and meditation.

## d. Male Infertility Clinic

### *Amrit Ayurvedic Centre, Bengaluru, Karnataka*

Over 2 decades Dr. V R Padmanabha Rao has been offering specialty treatment for male infertility under Ayurveda. He has treated over 5000 patients and uses techniques like *Uttar Basti* (medicated oil administered through genital tract) and *Yapana Basti* (medicated enema prepared by using ghee, oil, mutton soup and medicated decoction).

| | |
|---|---|
| Number of patients | Treated over 5000 cases of infertility |

Bhasmas and other drugs prepared under supervision of practitioner for own clinic

| | |
|---|---|
| Treatment | Male patients suffering from oligospermia, sexual disorders and female infertility cases due to hormonal imbalance, polycystic ovarian syndrome, recurrent abortion, dysmenorrhoea, endometriosis, etc. are treated at his centre and by his wife at a different centre. |
| Medicines used | Medicines are prepared under the supervision of the practitioner. |

## e. Bone Setting Clinic

### *Parathuvayalil Hospital, Keezhillam, Kerala*

Bone setting is a specialty predominantly practiced in Kerala. Dr Pathrose Parathuvayalil, MD in *Kayachikitsa* has been practicing it for the last several decades. Patients suffering from prolapsed disc, cervical spondylosis, frozen shoulder, simple and compound fractures are treated in the hospital. Dr Parathuvayalil, uses splints made of bamboo and bloodletting therapy along with various oil preparations in fracture management.

Dr Pathrose displaying splint used for bone setting

Management of fracture patient's at the bone setting clinic

## f. Child Specialty Clinic

### *Aravinda Ayurveda Hospital and Balaroga Chikitsalayam, Aangamaly, Kerala*

The use of Ayurveda for paediatric practice is another specialty of Kerala. Dr. Shyamlan is the seventh generation in a family which had been

practicing Ayurveda. Along with his wife Dr. Asha, he has over 30 years of experience in attending to children's problems.

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is around 20-30 cases. |
| Treatment | All type of paediatric cases especially bronchial complaints and skin ailments are being treated at the centre, including traditional treatment for infantile eczema. |

Dr. Shyamlal with a patient in the clinic

Dr. Shyamlal's pharmacy for pediatric practice

### g. Ayurvedic immunization program/*Swarn Bindu Prashana*

#### *Pandit Clinic, Bangalore, Karnataka*

Dr Sucharita, MD maintains height and weight record of children and provides compulsory immunization as a part of her practice. In the Ayurvedic child immunization programme, *Swarna Bindu Prashanas* given to children from zero to 16 years, every month on *Pushya Nakshatra* Day which is very popular among patients. An advertisement displayed opposite describes what is done.

**Birth Record**

Date of Birth : ______ Time of Birth : ______
Delivery: Normal / Vaccum / Forceps / Caesarean
Neonatal Status : ______
Birth Wt. : ______ Length : ______ Sex : ______
Blood Group : ______
Name of Mother : ______
Mother's Blood Group : ______
Name of Father : ______
Father's Blood Group : ______

**Suvarna Bindhu Prashana Schedule**

| Month | Days of Pushya Nakshatra | Remarks | Month | Days of Pushya Nakshatra | Remarks |
|---|---|---|---|---|---|
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**Suvarna Bindhu Prashana Schedule**

| Month | Days of Pushya Nakshatra | Remarks | Month | Days of Pushya Nakshatra | Remarks |
|---|---|---|---|---|---|
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**Growth Record**

| Date | Weight | Height | Date | Weight | Height |
|---|---|---|---|---|---|
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Swarna Bindu Prashana schedule, and growth record charts

Pamphlet promoting *Swarna Bindu Prashana*

Pindsweda performed on a cerebral palsy patient

### h. Paralysis Care Center and *Panchbhoutik* Treatment Centre

#### *Ayurveda city, Satara, Maharashtra*

Ayurveda City, with a 25 bedded indoor facility is spread across two acres in rural Satara district of Maharashtra. It is managed by Vaidya, Milind Kakade and offers Ayurvedic treatment on the basis of *Panchabhautik Chikitsa* and *Panchakarma* therapy for the treatment of various disorders. The treatment offered, is based on *Basti* (medicated enema), *Shirodhara* (pouring of medicated oil on forehead),*Pindasweda* (body fomentation using *Pottali* prepared with medicines, rice and milk), *Abhyanga* (oil massage) and *Swedana* (steam therapy).

Ayurveda City at Satara, Maharashtra

Shirodhara performed on a cerebral palsy patient

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is around 20 patients. |
| Treatment | Patients of paralysis and cerebral palsy seek treatment here. |
| Medicines used | Medicines based on *Panchbhoutika* therapy are prepared by the clinician at the hospital. |

## 3. Clinic Run by Groups

#### *Punarvasu Chikitsalaya, Pune, Maharashtra*

*Punarvasu* Ayurvedic Clinic in Pune is a unit of the Brahma Ayurveda Services Pvt. Ltd. Functioning since 1999, it has an OPD and a six bedded indoor facility for patients. It is the only private sector co-operative unit offering Ayurveda treatment. Consultation and services are provided by 10 professionally qualified Ayurveda physicians. A house physician and resident doctors are present 24x7 to attend to indoor patients. A total of 15,143 *Panchakarma* procedures were performed in one year at the clinic.

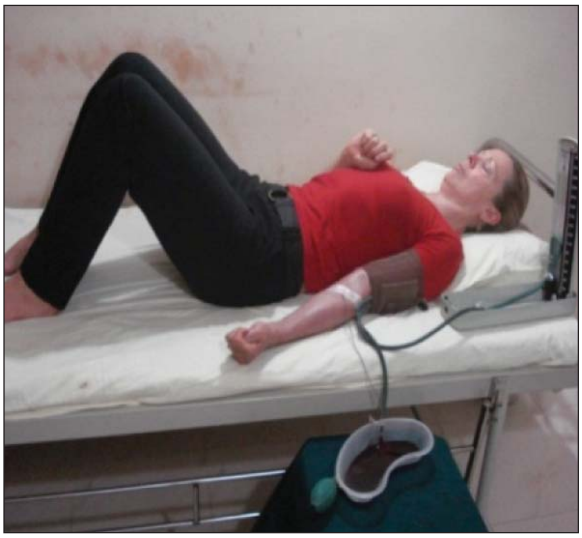
| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is about 30-35 patients. |
| Treatment | Maximum cases related to arthritis and neurological disorders are treated at centre. |
| Medicines used | Medicines prepared by a pharmacy owned by the group are used in the clinic. |

Vamana karma

Pindaswdeda procedure

Leech therapy on Leucoderma patient

Wound management



Bloodletting therapy

Lepa therapy

## 4. Clinic / Hospital run by charitable trust / private company

### a. OPD Consultation

*Jiva Clinic, Vivek Vihar, Delhi*

*Jiva* Clinic at Vivek Vihar is a franchise of Jiva Ayurveda, Faridabad and offers only OPD services. The chief physician of *Jiva* Ayurveda, Dr. Pratap Chouhan is a professionally qualified Ayurvedic practioner who visits the clinic on a monthly basis.

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is around 15 patients |
| Treatment | All kinds of chronic diseases and conditions such as diabetes, arthritis, stress, migraine, high blood pressure, skin diseases, cancer, asthma, spondylitis, allergies, hair loss and obesity. |
| Medicines used | Drugs prepared at the clinic's own pharmacy are prescribed. |

### b. OPD and Indoor Facility with *Panchakarma* unit

*Arya Vaidya Shala (AVS), Kottakal, Kerala*

For the last 107 years, the *Arya Vaidya Shala* has been providing clinical care through the Ayurvedic system of medicine. Today, with five Ayurvedic Hospitals and Research Centers, located at Kottakal, Cochin and Delhi, among others, it is one of the most renowned treatment centres in India providing quality Ayurvedic care. *Arya Vaidya Shala* is among the oldest organizations practicing *Panchakarma* and Kerala therapies in an organized manner.

Patients from all over the India and abroad visit the Centre for treatment. About 30 percent of the in-patients at KAVS are foreigners coming from over 50 countries including from US, UK, the EU, Canada, and South East Asian countries. The ambience of the hospital and its surroundings are clean, neat and green and an air of quiet efficacy pervades. Keraliyan *Panchakarma* procedures performed by trained staff are effective in treating neurological and skeleto- muscular diseases.

Chronic and complex disorders are treated in the 160 bedded charitable hospital which also provides accommodation, treatment, medicine and food free of cost to poor patients. A free cancer clinic providing mainly supportive and palliative therapy and a free diabetic clinic are also functioning in the charitable hospital premises. Around 5000 patients have availed the services of the cancer facility in the last five years. KAVS also operates a free clinic in Arattupuzha, Kerala, a backward costal area which had been hit by the Tsunami.

| | |
|---|---|
| Number of patients | Last year more than 17.5 lakh patients' availed treatment in the OPD and 11,562 new patients sought medical advice through correspondence. A total of 6,617 Patients availed IPD services. |
| Treatment | Chronic and complex disorders, neurological disorders cancer and diabetes treatment is provided. |

KAVS is involved in various research projects in collaboration with several government agencies including the Department of AYUSH, Department of Bio-Technology, Department of Science & Technology, National Medicinal Plants Board and Indian Council of Medical Research. With financial assistance from the National Medicinal Plant Board and Tata Trust Board, Mumbai, the Centre prepares planting material of medicinal plants through tissue culture and normal cultivation. These are distributed to farmers, women, NGO's, self help groups to promote the growth of medicinal plants.

The Delhi Centre of *Arya Vaidya Shala* – Ayurvedic Hospital & Research Centre has a 35 bedded indoor facility. It receives patients from the northern states, mainly from Delhi, Uttar Pradesh, Rajasthan, Himachal Pradesh, Haryana, Bihar, Uttarakhand, Punjab and J&K. Most of them get information about the Centre from the Internet or by word of mouth publicity.

The PI asked for an analysis of the condition for which patients accessed services at the AVS, Delhi. Among the patients, 65 percent suffer from neurological disorders such as Motor Neuron Disease, Transverse Myelitis, 18 percent suffer from muscular disorders and the remaining from metabolic, skin, respiratory and psychological disorders.

These patients are treated at the indoor facility by oil massage, *Shirodhara*, two types of '*Potli*' massages, oil wrap, paste bandage, medicated enemas along with internal medicine. Patients treated at the center are able to withdraw from the dependency on steroids and other allopathic drugs and observe an improvement in quality of life within three to six months. The PI interacted with Indian and foreign patients who expressed great satisfaction with the improvement they experienced.

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is around 30-40 patients. IPD has 70 – 80 percent bed occupancy. |

Classical preparations prepared by the pharmacy at Kottakal for sale at the Delhi branch

Chief Physician of Delhi branch of Kottakkal Dr. PR Ramesh giving information about drugs used in *Panchakarma* to PI

| | |
|---|---|
| Treatment | Patients from all over India and abroad approach the centre mainly for neurological disorders and skeleton-muscular diseases. |
| Medicines used | All classical preparations mainly in the form of powder, decoctions *Asava*, *Arista* and tablets manufactured at AVS, Kottakal are used for treatment. |

## 5. Ayurvedic unit running a corporate hospital

### *Ayurvedic Unit of Moolchand Hospital, Delhi*

The Moolchand Ayurvedic Unit was started in 1928. Ayurveda is one of the integrated units of 20 different specialties offered at the hospital. There is a free charitable OPD which runs in the morning hours. There is no separate provision of beds for the Ayurvedic wing. While the patient is admitted in a ward depending on his/her ability to pay, he/she is monitored through the Ayurvedic unit.

On an average of 30 to 40 Panchakarma procedures are performed daily. They include *Vaman karma* (vomiting), *Pindasweda* and different *Basti* (medicated enema)

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is around 30-40 patients. |
| Treatment | Patients suffering from musculo-skeletal disorders, rheumatic disorders, myopathy are treated in the hospital. |
| Medicines used | Medicines from renowned companies manufacturing Ayurvedic medicines are available. |

## 6. Integrated Ayurveda institute

### *Medanta Department of Integrative Medicine, Gurgaon, Haryana*

Medanta Department of Integrative Medicine selectively integrates Ayurveda into the practice of modern medicine. It brings together the

technological advantage that Medanta offers, with the time tested practice of Ayurveda.

Specialized programs in the Integrated Department include:

### Independent Programs

- Revitalization Clinic
- Immunity Clinic
- Predictive and Promotive Health Care
- Chronic Repetitive Injury Clinic
- Rheumatic Clinic

### Integrative Programs with other Specialties

- Parkinson's Disease Support
- Diabetes Holistic Support
- Rheumatic Support
- Cardiac Supportive Clinics
- Liver Care and Support.
- Cancer Holistic Management Support.

Using Prakriti analysis and correlating the information with the genetic makeup of a person, Medanta offers an executive health check-up for preventive interventions and life-style modifications.

It adopts a holistic approach towards the treatment of Parkinson's disease, by integrating Ayurvedic medicines, *Panchakarma*, Yoga and diet. For managing cancer patients undergoing chemo and radiotherapy, Ayurvedic drugs and procedures are used. Cardiac Insufficiency and Pulmonary Hypertension are as two areas in Cardiology which Medanta is addressing with Ayurveda.

A synergistic approach in the management of rheumatism and an integrative approach in managing diabetes focuses on early prediction, prevention of the disease and management of diabetes associated complications.

## 7. Telemedicine practice in Ayurveda

*Jiva Ayurveda, Faridabad, Haryana*

The *Jiva* Telemedicine Centre was established in 1998 as an integrated center offering telephonic health consultation. 125 Ayurvedic doctors are

View of practitioners and the Telemedicine Center, Jiva Ayurveda, Faridabad

providing telephonic consultation and advice to patients. Doctors analyze the case history and guide the patient using Ayurvedic therapies which comprise of medicine, diet and lifestyle changes. *Jiva* claims to "treat" over 10,000 patients every month, spread over 1,200 cities and towns across India.

Headquartered at Faridabad, *Jiva* Ayurveda also provides outpatient services through its franchise clinics in different places in India.

## 8. Hospitals run by trusts / private organization with multi-specialty practice

*Divyajyot Ayurvedic Research Foundation, Ahmadabad, Gujarat*

In Divyajyot Ayurvedic Research Foundation under the guidance of the chief physician, Shree Shree Maa Anantanand Tirthji has been offering

treatment through a holistic approach since 1978.

Patients belonging to all strata of society and from abroad come to the center seeking treatment. The treatment is in high demand among both men and women. A "Mind Body Healing" approach called *Daivavyapashraya Chikitsa* includes worship, meditation and Havans are used as supportive therapy to focus the mind.

| | |
|---|---|
| Number of patients | Average attendance in the daily OPD is about 50-60 patients. It increases to more than 120 patients when the main Vaidya extends consultation. |
| Treatment | Center treats patients of cancer, heart disease, renal failure, diabetes. |
| Medicines used | The centre owns a small Pharmaceutical unit and medicinal plants for routine use in the Hospital. |

Female patients awaiting consultation

Male patients awaiting consultation

Vd.Shree Maa Anantanand Tirtha offering consultation

## 9. Private hospital with multispecialty practice and community outreach

### a. *Kottathil Ayurveda Hospital, Chappathu, Ayarkunnam, Kerala*

The 20 bedded Kottathil Ayurveda Hospital is a Multispecialty hospital situated in rural Kerala. It organizes free medical camps in association with different charitable societies. On an average 150-200 patients are treated at each medical camp

Every day various Ayurvedic procedures are performed at the hospital which includes cases of *Agnikarma* (application of heat to the affected part using heated gold/copper/iron rod/clay),

View of OPD

Indoor patients facility

Patient undergoing *Katibasti* procedure

Bloodletting, *Ksharkarma* (local application of *Kshardravya (Alkalic substance)*, *Bandhan Karma* (fracture management & bandages) and Ophthalmic procedures.

| | |
|---|---|
| Number of patients | Around 100-120 new cases per month are treated at OPD Around 40-50 new cases per month are treated at indoor facility. |
| Treatment | Patients suffering from arthritis, skin disease, fractures and ophthalmic diseases are treated at the hospital |

b. *Punarnava Ayurveda Hospital Pvt. Ltd., Edappally, Cochin, Kerala*

Punarnava Ayurveda Hospital is an ISO 9001-2008 certified hospital with Green Leaf accreditation from Department of Tourism, Kerala. It is situated in Edappally (Cochin-Kerala) with branches in Kaloor, Alappuzha, Thiruvananthapuram and Ibra (Muscat-Oman). In operation for 20 years, it is run by a professionally qualified practitioner. It receives patients from more than 20 countries and promotes both wellness and curative aspects of Ayurvedic treatment in the network approach.

The hospital has incorporated modern diagnostic instruments, naturopathy consultation, and yogic practices along with traditional Ayurvedic treatment.

| | |
|---|---|
| Treatment | Patients suffering from orthopedic complaints like osteo-arthritis of the knee, spine related disorders, rheumatoid complaints, arthritis along with rare cases such as Myasthenia gravis and Nephrotic syndrome are treated here. |

Punarnava Ayurveda Hospital, Kerala

Record maintenance

A patient with neurological disorder under treatment

## 10. Specialty hospital in Ayurveda

### *Sreedhareeyam Ayurvedic Eye Hospital and Research Centre Private Ltd*

The Research Centre is a specialty clinic for the management of eye related disorders functioning for the 10 years. Today it runs a 300 bedded hospital with 25 doctors and 75 paramedical staff working under the supervision of the chief physician, Dr. NPP Namboothiri. Apart from the OPD in

Koothattukula, he conducts OPDs at Ernakulam, Thodupuzha, Calicut, Delhi, Hyderabad, Raipur, Patna and at Jaipur where patients access him in large numbers.

| | |
|---|---|
| Number of patients | Dr.Namboothiri's bi-weekly OPD draws around 200 patients at Koothattukulam. The indoor patients average about 250 patients per day. |
| Treatment | Patients suffering from diabetic retinopathy, retinitis pigmentosa, macular degeneration, glaucoma, visual problems and other eye diseases are treated. |

Sreedhareeyam Ayurvedic Eye Hospital and Research Center has been given the Centre of Excellence award by the Government of India. The hospital draws patients who have not found relief. They gain information by word of mouth and through articles in newspapers.

Chief Physician Dr. NPP Namboothiri examining a patient.

Patients waiting at Sreedhareeyam Eye hospital

Tarpana procedure performed at Sreedhareeyam Centre

## 11. Wellness Centre

### *Kairali Wellness Centre*

Ayurveda helps not only in offering treatment but also in the prevention of disease. Adopting Ayurveda as part of daily life helps to prevent disease by ensuring general well being and strengthening the immune system. *Panchkarma* is used here for overall fitness and *Sweda Karma* for overall health and vigour.

The curative aspect of Ayurvedic treatment was initially available only in Kerala and that too only in Ayurvedic hospitals such as *Arya-Vaidya* pharmacy in Coimbatore and *Arya Vaidya Shala* in Kottakal. This usually required making advance bookings with long waiting periods, long travel and hospital stays.

The first Kairali Wellness Center was started in Delhi in 1989 and offered the curative benefits of Ayurvedic treatment at a new location, thus bringing treatment closer home. It was started as a day center, keeping in mind that most of the ailments that were being treated did not require hospitalization; the patients could come and undergo treatment for an hour or two and go back to their homes or return to normal routine.

This became an instant success. Once cured, patients wanted to keep up with the health maintenance schedule and started coming back on a weekly basis.This promoted Kairali to start the wellness centre as well. Kairali today, offers its customers both the wellness and curative aspects of Ayurveda.

All technicians at Kairali are trained in Kerala and the medication and oils used, are prepared according to the traditional texts. Kairali, along with a few other select centers offers authentic Ayurvedic

Treatment at a Kairali Center

treatment. Kairali operates on a franchise model and this approach has began to be adopted by other traditional Ayurvedic family concerns. This approach has now become would famous and synonymous with Ayurveda for many people, particularly high clients visiting 5-star hotels.

## 12. Traditional Ayurveda practitioners

### a. *Poonkudilmana, Vallikkapatta, Malappura District, Kerala*

Poonkudilmana is a popular traditional Ayurveda treatment for mental illnesses. The chief physician is Sri. Devan Namboothiri. The treatment in the clinic involves use of traditional herbal medicines, *Arishtam*, *Ghritam*, *Thailam*, Pills, *Bhasmas* and procedures like *Abhyanga* (oil massage), *Shirodhara* (pouring of oil/water/milk etc. on head) and *Nasya* (nasal medication). The whole family practices *Mantra, Tantra* and *Chathirangam*. *Daivavyapsraya Chikitsa* like *Bali uzhichil* (A type of Mantra), *Thakkid Kettal* (charms, engraved on lead, copper or silver metal enclosed in cage made up of copper or silver and tied over any body part like hip, hand or neck) are performed in the clinic.

Bali Uzhichil- A type of Mantra

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is about 100 patients |
| Treatment | Mental affliction and anxiety. |

Patients taking treatment at Poonkudilmana

### b. *Dr. Unni Itoozhi - Itoozhi Namboothiris Ayurveda Nursing Home and Itoozhi Nethra Chikitsalayam, Mayyil, Kannur, Kerala*

Itoozhi Vaidyas are traditional Ayurveda physicians. Dr.Namboothiri, the chief physician has a Diploma in Ayurvedic Medicine and has been practicing for the last 46 years.

| | |
|---|---|
| Number of patients | Average daily attendance in the OPD is about 70 patients |
| Treatment | Patients suffering from neurological disorders, musculoskeletal disorders, skin diseases, children's diseases, infertility, psychiatric disorders and eye diseases are treated in clinic. |

Waiting room at the OPD

## 13. Integrated (Ayurveda and Allopathy) general practice

This type of integrated ASU and modern medicine practice is commonly seen all over India. The example is a generic example of a universal phenomenon – a combination of Ayurvedic and modern treatment.

### *Dr. V Varma - Private General Practice, Tekari village, District Raipur, Chhattisgarh*

Dr. Varma, a Bachelor in Ayurvedic medicine in Tekari village has a general practice where he uses both Ayurveda and Allopathic drugs. For treating acute cases, he uses allopathic treatment and in chronic cases like liver diseases and Arthritis, he combines Ayurvedic medicines along with Allopathic medicines. A large number of integrated course practitioners as well as those who are graduates of Ayurvedic Medicine are offering this kind of integrated practice. Dr. Varma told the PI that he administers IV Fluids, injections, prescribes anti-biotics and also offers consultation and uses Ayurvedic Medicine in combination with modern medicine. This is the broad picture of considerable ASU practice going on in many parts of the country.

Dr. Varma at his private clinic in Tekari village, Raipur.

Ayurvedic and Allopathic drugs are used by Dr. Varma

Ayurvedic medicines from private companies are prescribed

# II. Clinical Practice in Siddha

## Introduction

The Siddha system of medicine has undergone many changes in the course of its long history but it still remains the mainstay of medical relief to a large section of the people of Tamil Nadu.

It was officially patronized by an ancient Tamil king and had various branches with specialist physicians, hospitals with pharmacies and provision for proper nursing care.

Over time a once flourishing system suffered a setback and went through a period of decline. But in recent times efforts have been made to revive the system. The first school for Indian Medicine Systems covering Siddha was started in Chennai in 1924. Currently there are seven colleges (five Private and two Government) in Tamil Nadu and one private college in Kerala that offer courses in Bachelor of Siddha Medicine & Surgery (BSMS). There are three Government colleges in Tamil Nadu that offer a Post Graduate course in Siddha. The BSMS graduates find jobs in Tamil Nadu Government service, private hospitals and related fields. The post graduates usually find jobs in teaching institutes, conduct research in Government Siddha Institutes or are engaged in private practice.

In rural areas, where Allopathic practitioners are scarce, Siddha practitioners practice both Allopathy and the Siddha system. The Siddha system of medicine has recently become popular in urban areas where there is greater awareness about the side effects and complications caused by Allopathic medicines.

The Tamil Nadu Government has issued an order which recognizes a Siddha qualified doctor as a person practicing the modern scientific system of medicine under the Drugs and Cosmetics Act 1940. According to latest figures there are 9217 registered Siddha practitioners as on 1.4.2010. Source: http://indianmedicine.nic.in/writereaddata/linkimages/8786199854-Summary%20Part-I.pdf (accessed on 1.8.2011).

## Practice of Siddha in Tamil Nadu

### National Institute of Siddha (NIS), Chennai, Tamil Nadu

Established in 2004 by Government of India, the National Institute of Siddha (NIS) was set up as an apex institute to promote the growth and development of Siddha. It does this through teaching post-graduates in six branches of Siddha, conducting research on various aspects of Siddha and by providing quality medical care through the Siddha system of medicine. The NIS is affiliated to The Tamil Nadu Dr. MGR Medical University, Chennai.

NIS has a 160-bed hospital comprising clinical departments for Maruthuvam (General Medicine), Gunapadam (Pharmacology), Sirappu Maruthuvam (Special Medicine), Kuzhanthai Maruthuvam (Paediatrics), Noi Nadal (Pathology) and Nanju Noolum Maruthuva Neethi Noolum (Toxicology). Each of these departments runs an independent OPD and IPD.

National Institute of Siddha, Chennai

Front hall of National Institute of Siddha

Patients waiting for medicines at the OPD

Inpatient Ward

Varmam Therapy for Cegana Vatham

Thokkanam for Sirakamba Vatham

External Therapy – Ennaikattu

External Therapy – Patru

Siddha physician examining a patient

| | |
|---|---|
| OPD | Average daily attendance: 1050 patients |
| IPD | Average number of new patients treated in indoor facility each year: 2000 |
| Speciality clinics | • Geriatric Clinic<br>• Special OPDs for:<br>Kalladaippu (Urolithiasis)<br>Swasa Kasam (Bronchial Asthama)<br>Vellai Noi (Leucorrhea)<br>Aan Maladu (Oligospermia) |

| | |
|---|---|
| | • Mobile Medical Clinic in nearby village 'Perungalathur' adopted by NIS. |
| Facilities offered | • Thokkanam (Nine types of massage techniques)<br>• Varmam Therapy<br>• Yogam<br>• Ennai Kattu<br>• Computerised Management Information System for clinical data management of OPD<br>• Collaborative Research Center for Siddha research activities• Museum displaying raw drugs and herbarium sheets |
| Suggestions | NIS, Chennai has neat and clean surroundings and well-organized management. The institute should become a showpiece for visitors to Chennai in case they wish to know about Siddha Medicine and its practice. All members of the faculty need to be trained to oversee material on the website and to contribute to its regular updating. This website should become the most credible source of information on Siddha along with FAQs and links to other important hospitals/ Centres of Siddha practice. |

## 1. OPD and Medical Camps

### Centre for Traditional Medicine and Research (CTMR), Chennai

The Centre for Traditional Medicine and Research provides primary healthcare through the Siddha system of medicine to the fishing community and underserved population of Kanchipuram district.

Apart from medical consultation and supply of medicines, external therapies such as *Thokanam*, *Varmam,* Fomentation and Oleation are provided free of cost. Tamil Nadu Industrial Investment Corporation (TAMCOL) funds the cost of medicines as part of its Corporate Social Responsibility.

The centre also runs mobile clinics on specific days of the week. It provides medicines to patients with chronic diseases like diabetes and hypertension. Periodical tests for monitoring anaemia and blood sugar levels are also conducted. Those who require further treatment are referred to Siddha departments of government hospitals.

Awareness programs on the management of non communicable and life style diseases are conducted with the help of Residents' Associations as well as NSS volunteers and Rotary clubs.

## 2. *Varmam* (Varma) Therapy in Siddha Practice

### *Varmam* Therapy

*Varmam* Therapy, also known as *Kalam, Swasam, Pranan, Kalai, Saram Yogam, Vaasi* is a special branch of Siddha medicine practiced only in Tamil Nadu. Nagercoil and Kanyakumari districts in the state are its main centers. Practitioners, pass on knowledge and skills to the next generation.

In *Varmam* treatment, mild to moderate pressure is provided through fingers and hands at various *Varmam* points, located on the basis of anatomical structures. The treatment may be provided alone, or it can be combined with drug therapy. It could include:

- Stimulation of the *Varmam* Point alone
- Stimulation of *Varmam* Points and administration of herbal preparations
- Stimulation of *Varmam* Points and administration of metallic preparations
- Stimulation of *Varmam* Points and administration of preparations from animal sources
- Stimulation of *Varmam* Points according to individual stars/planets
- Stimulation of *Varmam* Points by Tantric energy

Treatment with Varmam Therapy

Treatment with Varmam Therapy

The treatment is reported to have several advantages which are listed below:

- There are no side effects
- No specialized equipment is required
- It is easy to administer
- It is cost effective
- Patients can be treated in any part of the world
- Duration of treatment may be shortened, when combined with the regular treatment procedures
- Dosage of drugs may be reduced, when *Varmam* treatment is given in addition to conventional treatment

## 3. Antenatal care in Siddha practice

Under the Maternal and Child Health programme run by the Institute of Public Health, the effects of using Siddha medicine for ante-natal care were studied. From 2005, it is being practiced for providing healthy antenatal (ANC) care to pregnant women.

Pregnant women attending the outpatient clinic for antenatal care are briefed by trained counselors and based on their choice they are either directed for conventional ANC care or for Siddha care.

Siddha prescribes the medicines right from the first month to the tenth month.

The patients were trained to conduct:

- Abdominal massage using *Ullundhu thailam*: *Ullundhu thailam* is applied in the eight month, daily once, from hips to abdomen and from abdomen to perineum untill delivery. It strengthens and nourishes the muscles of the pelvis and perineum.
- *Kungizhliya thailam* is applied in the ninth month, daily once especially in night as vaginal tampons untill delivery.

Pregnant women are counseled to reduce stress and enjoy motherhood. Siddha philosophy lays emphasis on happiness and balance of the mind during pregnancy. Based on this, women are given a set of *asanas, pranayama* and *dhyana* to tone their pranic body.

Primary Health Centre – Siddha treatment wing at Poondamalli, Chennai.

Diagnosis with *nadi pariksha*

Pregnant women at Siddha dispensary

The observational research points to the following:

- Prevents perineal tear.
- Prevents and cures anaemia.
- Prevents low birth weight deliveries.
- Treats morning sickness, loss of appetite and leucorrhoea.
- Encourages a normal and safe delivery.

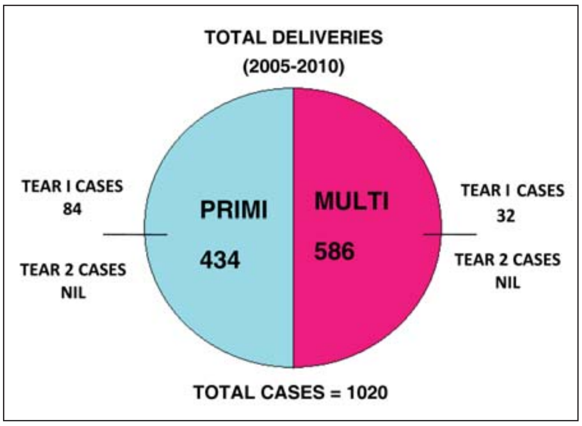
### Postnatal care in Siddha practice

Postnatal care in Siddha is aimed at normalizing the post-natal changes after delivery such as strengthening the pelvic cavity and uterus, relieving pain in the back, hips and legs, improving lactation appetite and digestion and prevention of complications. Specific medicines are prescribed for internal and external application.

Herbs used in the antenatal care.

Siddha medicine was found to improve the quality and quantity of a mother's milk enabling women to exclusively breastfeed for the first six months.

One thousand twenty deliveries were conducted for those who had ANC done with Siddha medicine. None had second-degree perineal tear and 116 had first degree tear. The results are shown below:




## 4. Thokkana therapy

### *SKM Siddha Clinic, Erode*

The SKM Siddha Clinic was started in 1989 as an OPD At present, SKM runs hospitals at Erode and Chennai. In addition, there are 10 Outpatient hospital networks operating through Swami Vethathiri Maharishi's World Community Service Centers across Tamilnadu.

The Clinics at Erode and Chennai employ Siddha practitioners and have so far treated around two lakh patients.

Siddha treatment is started by adopting the basic principles of Siddha viz. Purgation, Oil Bath, Nasiyam, Kallikkam etc., to make the unbalanced humors (*Vatham, Pitham, Kapam*) return to normal.

A variety of diseases are treated at the Clinic. Some of them include: aphthous ulcer, acid peptic disorders, liver disorders, pharyngitis, laryngitis, tonsilitis, allergic rhinitis, rheumatoid arthritis, diabetes mellitus, anaemia and nutritional disorders, skin diseases, dndocrine disorders and pediatric diseases are also treated.

Ennai Kuliyal

Thokkanam Chikitchai

Ottrada chikitchai

Neeravi Kuliyal

Treatment for Arthritis – Mooligai Ottradam

Treatment for Arthritis – Mooligai Poochu

Treatment for Arthritis – Mooligai Patti

Ennai Ozhukku

Before treatment Eczema After 15 days of Treatment

Before treatment Warts in neck and chest After 7 days of treatment

Before treatment Psoriasis After 10 days of treatment

## 5. *Pattru Chikitchai* in Siddha practice

### *Ashram Siddha Yoga Research & Charity Trust*

The Trust, managed by a group of Trustees operates a free Siddha hospital in the premises of the Gandhi Ashram. Till date it has treated around 20,000 poor patients.

The main treatment is a specialized method called "Pattru" or Poultice for reducing pain and swelling in joints. It is also effective in skin diseases.

### Ingredients of *Pattru* medicine

Withania somnifera (roots)

Commiphora mukul (resin)

Acorus calamus (roots)

Aloe barbadensis (resin)

Zingiber officinale (dried roots)

Alpinia galanga (roots)

Both knee joints of patient before treatment as on 25.5.06

After 3 months treatment with pattru medicine as on 24.8.06

Front view of Ashram speciality clinic

Palm leaf manuscripts describing *Pattru*

## 6. Speciality Practice in Siddha

### *Sri Raghavendra Hospital, Chennai*

Sri Raghavendra Hospital is a 10 bedded hospital started in August 1996 which received ISO 9001 certification in 2008.

It is run by Dr. S Ramaswamy Pillai, a well-known doctor of Siddha medicine.

The manuscripts explain the structure, function and treatment of all ailments relating to spine and joints. They also offer a detailed study of etiology, diagnosis, prognosis, prevention and treatment of diseases that affect head, neck, lower back, shoulder, knee and the nervous system.

The hospital offers specialized treatments for the following disorders without any surgery or the use of pain killers:

- Cervical Spondylosis & Disc bulge
- Peri Arthritis & Frozen shoulder
- Cervical Root compression & Cervical Mylopathy

Palm leaves describing Siddha treatment in hospital library

Male patient undergoing treatment

- Lumbar Spondylosis & Disc bulge
- Lumbar Root Compression & Sciatica
- Rheumatoid Arthritis & Osteo Arthritis
- Paralysis & Parkinson disease
- And all Spine, Bone and joint disorders

Women undergoing treatment

## 7. Bone setting

### *Siva Sakthi Bone setting Center, Kallakuruchi, Vilupuram district, Tamilnadu*

The Siddhars prepare 32 types of external medicines to handle emergency care and treatment. Out of these, Kombukattal and Murichal deal with bone fractures and dislocations.

Operational since 1998, the Siva Sakthi Bone Setting Center has treated approximately 29000 patients, most of whom belong to the low socio-economic group.

The Siddha System also treats different kinds of injuries. It includes: Bone fractures, Joint dislocation, Ligament tear, Subluxations, Ligament injuries, Fracture dislocation, Fracture with open injury (Protrusion of bone outside), Sprain, Contusion, Nerve injury.

Despite success, there is an overall decline in the Siddha bone setting practice. The lack of interest in passing on information to the next generation, falling interest in maintaining manuscripts and the availability of technological solutions have contributed to this decline.

## Elbow fracture treatment

Elbow fracture

X-ray before treatment

Elbow after treatment

X-ray after treatment

## Hip dislocation

Before treatment

After treatment

Bone setting treatment

# III. Clinical Practice in Unani Medicine

## Introduction

The Unani system of medicine also known as Greeco-Arab medicine originated in Greece, from where it came into India with Arab and Persian traders.

Indian physicians enriched it with their knowledge of indigenous plants and experiments to make it a nationally accepted system of treatment. It is quite different from the ancient Greek system and is referred to as 'Unani-Tibb' to indicate its origin in India.

The Mughal period was the golden era of Unani medicine. The Unani physicians or Hakeems had state support and patronage and occupied a vantage position in every town, where they were also associated with every regiment or brigade of the army. During this period many Unani physicians from other countries also came to India to work as practitioners.

After the decline of the Mughals, the Hakeems were welcomed by almost all princely states of undivided India like Arcot, Rangoon, Nizam of Hyderabad, Bhopal, Mysore, Travancore, Patiala, Indore, Rampur, Junagarh, Lahore, Awadh, Jodhpur, Gwalior, Loharu, Baroda, Dungarpur, Jhansi, Pataudi, Karnal and Kapoorthala etc.

Following the introduction of the allopathic system of medicine during the British period the Unani system declined in importance.

In the Unani system of medicine, the Hakeem takes a holistic view of disease and treatment. The total personality of the patient is taken into account as each individual has a basic structure, temperament, psychic make up and self defence mechanism. The temperament of the person is identified and the diet and medicine given is considered the most suitable for achieving and maintaining the health of that particular person.

Unani System stresses on *Taqwiyat* (strengthening immunity), *Muqavvwiyat* (tonics) and *Mufarrehat* (exhilarants that produce a sense of well being, mental correlation and sound behaviour without any intoxication and addiction). The medicines not only enable the *Tabiyat* to overcome the disease, but even after recovery it improves the resistance of the body.

The PI asked Dr. Uzma, a clinical registrar at Majeedia Hospital to visit the most popular among the Hakeems in North India towns to observe and describe their clientele. The inclusion or exclusion of any practitioner does not denote any effort to favour or ignore any person. This is merely an account of the cross section of practice that goes on particularly in North India and is a first hand account of the treatment that the public appears to be receiving. The practice of Unani Medicine in Kashmir where it is immensely popular was undertaken by Dr. Rasikh Javaid, Research Consultant attached with the PI, himself a Kashmiri, who visited different districts and provided a description of the practitioner and his clientele.

According to latest figures there are 51067 registered Unani practitioners as on 1.4.2010. Source: http://indianmedicine.nic.in/writereaddata/linkimages/8786199854-Summary%20Part-I.pdf (accessed on 1.8.2011).

In the following descriptions a cross-section of government facilities and private clinics have been described.

## 1. Hospitals in teaching institutes

### *National Institute of Unani Medicine (NIUM), Bengaluru*

This Institute was established in 1984 as an autonomous organization under the Department of AYUSH, Ministry of Health & Family welfare and registered under the Karnataka Societies Act, 1960.

The hospital has outdoor and indoor facilities for providing Unani treatment. All medicines are provided to patients free of cost. There are good facilities for pathological and bio-chemical investigations available in the hospital. Presently there are 100 beds in the IPD.

The following departments are run in the hospital:

- General
- Surgical
- Gynaecology
- GIT Diseases
- Cardiac Diseases
- Respiratory Diseases
- Sexual Diseases
- Obesity & Diabetes

- Liver Disorders
- Psychiatry
- Urology
- Health Promotion & Dietetics

Regimenal Therapy Unit: The following facilities are provided in the Regimenal Therapy Unit:

- Dal'K ( Massage)
- Hajamat (Cupping)
- Irsal Alaq (Leaching)
- Inkebab (Vapour Bath)
- Nutool (Irrigation)
- Takmeed (Fomentation)
- Fasd (Venesection)

National Institute of Unani Medicine, Bengaluru

Health Huts, NIUM, Bengaluru

Clinical practice at NIUM, Bengaluru

| | |
|---|---|
| OPD | Approximately 350 patients visit the hospital daily. |
| IPD | Bed occupancy remains more than 70%. |
| Treatment | Skin diseases,, arthritis, obesity, diabetes, psychiatry, sexual and neurological disorders |
| Dispensary | Both Murakkabat (compound drugs) and Mufradat (single drugs) are prepared in the Institute's pharmacy unit and given to the patient free of cost. |
| Suggestions | NIUM, Bengaluru should become a showpiece for visitors to Bengaluru. It should become a hub for visitors interested in seeing how Unani Medicine is practiced. This can build the trust in a wider society as few have any knowledge about Unani Medicine. |

### *Ajmal Khan Tibbiya College & Hospital, Aligarh*

This is one of the premier Unani education Institutions offering graduate & post graduate teaching. It was named after the legendary figure Hakeem Ajmal Khan and is the one of the oldest Institutions started in 1927.

The associated hospital has 150 beds and the occupancy remains more than 75%. On an average 400-450 patients are treated in the daily OPD with free distribution of Unani Medicines. IPD patients are also treated free of cost. Operations and maternity services are also catered for without charge. Ajmal Khan Tibbiya College also imparts training to the Interns for routine immunization, field surveys, data collection and statistical analysis. The Institution works in collaboration with the District Health Administration to improve public and community health.

| | |
|---|---|
| OPD | Approximately 400-450 patients visit the hospital daily. |
| IPD | Bed occupancy remains more than 75%. |
| Treatment | Skin diseases, arthritis, obesity, diabetes, psychiatry, sexual and neurological disorders |

| | |
|---|---|
| Dispensary | Free distribution of both *Murakkabat* (compound drugs) and *Mufradat* (single drugs). |
| Suggestions | It should be recognized as a centre of excellence and a model Institute. |

### Following OPDs are functioning in the Hospital

1. Moalijat (Unani medicine)
2. Jarahat (Surgery)
3. Amraz-e-Niswan wa Atfal (Gynae. and Obst.)
4. Amraz-e-Ain (Ophthalmology)
5. Amraz-Unz Anaf wa Halaq (ENT)
6. Modern Medicine

### Facilities Available

1. Immunization
2. Labour Room
3. Operation Theatre
4. Unani Pharmacy
5. Free Meals to Patients
6. Free Medicines to OPD / IPD patients.
7. X-Ray Section
8. Ultrasonography
9. Pathology Lab.
10. Private Ward

### Specialized treatment/Facilities available

1. Advanced Unani treatment
2. Major / Minor Surgical Operations
3. Endoscopy / Laparoscopy facilities
4. Regimenal Therapy

### IPD Sections

1. Moalijat and Ilaj bit Tadbeer (Unani Medicine and Regimenal Therapy)
2. Jarahat (Surgery)
3. Ain, Unz, Anaf wa Halaq (Ophthalmology and ENT)
4. Qabalat wa Amraz-e-Niswan (Gynaecology & Obstetrics)
5. Amraz-e-Aftal (Paediatrics)
6. Modern Medicine

Patients in the IPD in Ajmal Khan Tibbiya College Hospital, Aligarh

### Hospital at a Glance (January 2010 to December 2010)

| | | |
|---|---|---|
| 1. | Total number of OPD patients attended | 97383 |
| 2. | Total number of IPD patients admitted | 1469 |
| 3. | Total number of X-rays done | 4311 |
| 4. | Total number of USG done | 218 |
| 5. | Total number of operations done | 431 |
| 6. | Free Medical camps | 03 |

### *Majeedia Hospital, Jamia Hamdard, New Delhi*

Majeedia is a multi specialty hospital in New Delhi which offers both Unani and Allopathic health services. It operates two Unani OPDs daily – for Surgery and Gynecology, along with Allopathy OPDs.

Patients visiting the hospital have access to both Unani and Allopathic systems of medicine under the same roof. When a patient in the hospital does not respond to the Unani system of medicine the treatment is changed to allopathy.

The hospital draws patients primarily because of their immense faith in the Unani system of medicine.

A number of well know Hakeem's (male & female) run the Unani OPDs.

Hakeem Shakeel Ahmad Tamanna is a leading physician in the treatment of Viral Hepatitis. Hakeem Prof. S Shakir Jameel, currently the Director General, CCRUM, is well known as a general physician and for *Ilaj-bit-Tadbeer* (Regimental Therapy). Hakeem Mohammad Akhtar is renowned for his treatment of Arthritis.

The hospital has its own Unani dispensary using only Hamdard preparations. For outdoor patients some medicines are given free of cost. However, for indoor patients' all medicines, bed, meal charges and some routine investigations are free of cost. Some investigations are charged at a discounted rate of 25 percent of the total cost.

Majeedia Hospital is well-known for the treatment of Jaundice in Delhi. Patients from Bihar and some districts of Uttar Pradesh like Moradabad and Bijnor also attend the clinic. Regimental Therapy is also available in the hospital and includes leeching and cupping, which are very effective for joint pains and Cervical Spondylosis.

Hakeem Shakeel Ahmad Tamanna at Unani OPD

Indoor patients at Majeedia Hospital

| | |
|---|---|
| Number of patients | Approximately 100-150 patients daily visit the hospital. |
| Diagnosis based on: | • Patient history<br>• Nabz (pulse reading)<br>• Investigation using modern parameters |
| Treatment | Jaundice, Hepatitis B, Hepatitis C, joint pains, GIT problems, anxiety, depression, cardiac problems, Neuropathy, kidney stones and Tonsillitis, cough and cold, especially in children. |

### *Ayurvedic and Unani Tibbia College, Karol Bagh, Delhi*

| | |
|---|---|
| Number of patients | Approximately 200-300 patients visit the hospital daily for treatment of various types of diseases, especially skin problems. |
| Diagnosis based on: | • Patient history<br>• Nabz (pulse reading)<br>• Investigation using modern parameters |

Entrance of Ayurvedic and Unani Tibbia College

OPD patients at the registration counter

Patient undergoing cupping

Amale Huqna (Enema being given to a child)

Surgery, Medicine, Gynecology, Pediatric and Skin OPDs are held at the hospital. The free distribution of medicines attracts more patients from the lower income group while some are from middle-class families.

## 2. Clinical Unit of Research Organisation

### *Ram Manohar Lohia (RML) Hospital, Delhi*

At the RML hospital, three Unani OPDs operate six days a week under the Central Council for Research in Unani Medicine (CCRUM)

| | |
|---|---|
| Number of patients | 250-350 patients visit the hospital daily |
| Treatment | Mainly for skin diseases like Eczema, Leukoderma, and Psoriasis. |

Unani specialists attending OPD

## 3. Private setup of Unani Medicine Practice in Delhi and Neighbouring Districts

### *Hakeem Babu Khan, Faridabad, Haryana*

| | |
|---|---|
| Name | Hakeem Babu Khan |
| Location | Baroli village, Faridabad, Haryana |
| Qualification | Nil |

Hakeem Babu Khan

| | |
|---|---|
| No. of daily patients | 75-125 |
| Specialty | Chronic renal failure |
| Type of medicines | Own preparation in powder (safoof) form |
| Style of diagnosis | Nabz (Pulse) |
| Details | He is a non-institutionalally qualified Unani practitioner in Baroli village in district Faridabad of Haryana, 25 kilometers from Delhi. He is famous for treatment of chronic renal failure. He gives his own medicine in powdered form, free. Most of the patients were from Delhi and Faridabad. They included Sikhs, Hindus among the Punjabis. They had very strong faith in Unani medicine. Patients come every week to continue their treatment. |
| Suggestions of the Hakeem | Raw drug quality control should be mandatory. Government outlet for purchasing herbal medicines should be established. Control of duplicate medicines and price control should be enforced. Advertisements of the Unani medicine should be done for awareness of the people. |

### *Hakeem Mohammad Yameen, Moradnagar, Ghaziabad, Uttar Pradesh*

Hakeem Mohd. Yameen is based in Muradnagar, Ghaziabad, U.P and has been practicing Unani medicine for the last 50 years.

He owns the Falahi Dawakhana and medicines that he prescribes include *Mufradat* (decoction of various herbal drugs, his own *safoof* (powder drugs) as well as market preparations.

| | |
|---|---|
| Number of patients | Sees 250-300 patients every day |
| Treatment | Heart and Cancer patients. |
| Diagnosis based on: | Pulse reading |

Patients at registration counter

## *Padma Shri Hakeem Saifuddin, Meerut, Uttar Pradesh*

Padma Shri Hakeem Saifuddin Ahmed is based in Meerut and is a graduate in Unani Medicine. He was appointed as the Honorary Physician to former President of India, Fakhruddin Ali Ahmed. In 1976 the Govt. of India awarded him the Padma Shri for his contribution to society.

Hakeem Saifuddin Ahmed

Hakeem Saifuddin Ahmed has been practicing Unani medicine for the last 60 years and he is well known in social and political circles of U.P. and Delhi.

His medicinal prescriptions include *Mufradat* (decoction of different herbal drugs) and his own preparations.

| | |
|---|---|
| Number of patients | Sees 100-150 patients every day |
| Treatment | Chronic Renal Failure, Gastro Interstinal tract diseases, Pelvic Inflamatory Disease, Hypertension and Insomnia |
| Diagnosis based on: | Pulse reading |

## *Hakeem Imamuddin Zakai, Delhi*

Hakeem Imamuddin Zakai is a graduate in Unani medicine (BIMS) and is well known in East Delhi where he treats common diseases.

Hakeem Imamuddin Zakai examining a patient

Zakai owns Neelam Dawakhana, a GMP certified Unani pharmaceutical firm and prescribes *Mufradat* (decoction of different herbal drugs) and his own preparations.

He is also the author of a few books on Unani medicine.

| | |
|---|---|
| Number of patients | Sees 100-150 patients every day |
| Diagnosis based on: | Pulse reading |

## *Hakeem Syed Mohammad Ahmad Qadri, Saharanpur, U.P.*

The septuagenarian is a well known Unani Hakeem based in Saharanpur, Uttar Pradesh. He treats all types of patients and prescribes *Mufradat* (decoction

Hakeem Qadri's patients

of different herbal drugs) as well as other medicine prepared by himself.

| | |
|---|---|
| Number of patients | 150-200 patients every day |
| Diagnosis based on: | Pulse reading |

### *Hakeem Syed Burhan Ahmad Niazi, Agra, Uttar Pradesh*

A Doctor of Unani Medicine, Hakeem Syed Burhan Ahmad Niazi is well known in Agra and cities like Ajmer, Firozabad, Etah, Hathras and Tundla.

Exterior of clinic

Hakeem Syed Burhan Ahmad Niazi

He treats all types of patients and prescribes *Mufradat* (decoction of different herbal drugs) as well as his own preparation of medicines.

| | |
|---|---|
| Number of patients | 125 -150 patients every day |
| Diagnosis based on: | Pulse reading |
| Treatment | Chronic Renal Failure and Hepatitis |

### *Hakeem Khursheed Murad, Bareilly, Uttar Pradesh*

Hakeem Murad attending patients in his house

Hakeem Murad, a graduate in Unani Medicine is based in Bareilly in U.P. He is well known in northern India and also gets also patients from Chandigarh, Punjab, Delhi and Lucknow.

He prescribes *Mufradat* (decoction of different herbal drugs) as well as his own preparation of medicines.

| | |
|---|---|
| Number of patients | More than 200 patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in treating Arthritis, Renal Stones and Chronic Renal Failure |

### *Hakeem Mohammad Yameen, Delhi*

The Hakeem, with no formal institutional qualifications has a very deep knowledge of Unani medicine and runs a wholesale shop of raw Unani medicines in old Delhi.

Hakeem Mohammad Yameen

He prescribes *Mufradat* (decoction of different herbal drugs) as well as his own preparation of medicines.

| | |
|---|---|
| Number of patients | 70-100 patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in treating Arthritis and Sciatica |

## *Hakeem Mazhar Subhan Usmani, Delhi*

Hakeem Mazhar Subhan Usmani

Hakeem Mazhar Subhan Usmani is a Fazil-ul-tib Bachelor of Medicine & Surgery (F.M.B.S) He is the former Head of Moalijat (Medicine) Department at Ayurveda and Unani Tibbia College, New Delhi; the former Chairman of Minorities Commission, Govt. of India and a physician in the Unani O.P.D. at Tibbia College Hospital, New Delhi.

After retirement he is practicing from his residence in Delhi. Hakeem Usmani prescribes *Mufradat* (decoction of different herbal drugs) as well as market preparations.

| | |
|---|---|
| Number of patients | 50-100 patients daily |
| Diagnosis based on: | Pulse reading patient history and investigations |
| Treatment | Specializes in treating skin problems, Arthritis, anxiety, depression, digestive problems and Chronic Renal Failure. |

## *Hakeem Jameel Asghar, Chandpur, Bijnore, Uttar Pradesh*

Hakeem Jameel Asghar in his clinic

The Hakeem from Chandpur, Bijnore is a Unani practioner and has been treating patients for the last 20 years.

He prescribes *Mufradat* (decoction of different herbal drugs) as well as market formulations.

| | |
|---|---|
| Number of patients | 100-150 patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in treating Jaundice and Leucorrhea |

## *Hakeem Marghoobul Hasan, Chandpur, Bijnore, Uttar Pradesh*

Hakeem Marghoobul Hasan

Marghoobul Hasan, the son of a famous Hakeem, is not an institutionally qualified, but is an expert in treating both female and male infertility cases.

Hasan prescribes *Mufradat* (decoction of different herbal drugs) as well as his own preparation..

| | |
|---|---|
| Number of patients | 100-150 patients daily. |
| Diagnosis based on: | Pulse reading along with patient history |

## *Hakeem Anwar Ahmad, Delhi*

Hakeem Anwar Ahmad

Hakeem Anwar Ahmad, a qualified Unani practioner has been an Honorary Physician to the President of India, Shri Fakhruddin Ali Ahmed. He was former Head, Department of Ilm-ul-Advia (Pharmacology), Ayurvedic and Unani Tibbia College, New Delhi; Chairman, Committee of Courses and Studies, Dean, Faculty of Ayurvedic and Unani Medicine; Member, Academic Council and Court of Delhi University. He is also a former physician of Tibbia College Hospital.

Post retirement he is practicing Unani medicine from his residence in East Delhi.

With more than 50 years of experience behind him, Hakeem Ahmad sees patients not only from India but also from South Africa, Uzbekistan, Kyrgyzstan, USA, UK, Sri Lanka and Saudi Arabia

He also gives consultations at the Ram Manohar Lohia hospital twice a week.

He prescribes Mufradat (decoction of different herbal drugs) as well as his own preparations and market formulations.

| | |
|---|---|
| Number of patients | 50-100 patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in treating Hepatitis, Migraine, Sinusitis and skin diseases |

## *Hakeem Jameel Ahmad, Delhi*

Hakeem Prof Jameel Ahmad

Hakeem Jameel Ahmad, a qualified Unani practioner, is the former Principal, Hamdard Tibbia College, Delhi University and Dean, Faculty of Medicine (Unani), Jamia Hamdard, New Delhi. A popular Unani physician in Majeedia Hospital, Delhi, he is practicing Unani medicine even after retirement.

He prescribes *Mufradat* (decoction of different herbal drugs) and market formulations.

| | |
|---|---|
| Number of patients | 100-150 patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in the treatment of Hepatitis and Gastro-intestinal tract diseases |

## *Zakeem Shoaib, Amroha, Uttar Pradesh*

Hakeem Shoaib is the eighth generation Hakeem practicing Unani system of medicine in Amroha Uttar Pradesh. A qualified Unani practioner, he

Hakeem Shoaib

sees patients from Delhi, Uttarakhand, Rajasthan, Haryana and neighboring towns and villages of Uttar Pradesh.

He prescribes *Mufradat* (decoction of different herbal drugs) and his own preparations.

| | |
|---|---|
| Number of patients | More than 200 patients daily |
| Diagnosis based on: | Pulse reading, Baul (Urine) along with modern pathological markers. |
| Treatment | Specializes in the treatment of digestive problems, skin disease, Arthritis and Chronic Renal Failure. |

### *Hakeem Zafar, Sambhal, Uttar Pradesh*

Hakeem Zafar is a leading Unani practioner in Moradabad district, Uttar Pradesh. He follows his father's footsteps who was also a well known Hakeem in the area. He sees patients from all parts of U.P, Delhi, Rajasthan, Punjab, Haryana, Bihar and Maharashtra. Hakeem Zafar's family runs a Janta Dardmand *Dawakhana*, a Unani pharmaceutical establishment.

Hakeem Zafar

Patients in the waiting room

He prescribes *Mufradat* (decoction of different herbal drugs) and his own preparations.

| | |
|---|---|
| Number of patients | More than 200 patients daily |
| Diagnosis based on: | Pulse reading with patient history |
| Treatment | Specializes in the treatment of migraine, sinusitis, arthritis, skin, digestive trouble and kidney stones |

### *Hakeem Asrar Ahmed, Haryana*

Hakeem Asrar Ahmed

Hakeem Ahmed is a Bachelor of Unani Medicine & Surgery and M.D (Pharmacology).He works at the Government Unani Dispensary, Karnal, Haryana and provides free Unani medicines made by the government owned Indian Medicine Pharmaceutical Corporation Limited (IMPCL). Most of his patients are from neighboring villages.

| | |
|---|---|
| Number of patients | 40-60 patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in the treatment of Arthritis, digestive, skin and respiratory problems, piles, Hepatitis and fever |

### *Hakeem Farhan Akhtar, Ghaziabad, Uttar Pradesh*

Hakeem Farhan Akhtar

Hakeem Akhtar is a Bachelor of Unani Medicine and Surgery, M.D. (Pharmacology) who works at the State Unani Hospital, Ghaziababad district,U.P. His patients are mostly local and from nearby villages

| | |
|---|---|
| Number of patients | 50 Indoor patients and 15-20 day care patients daily |
| Diagnosis based on: | Pulse reading |
| Treatment | Specializes in the treatment of Arthritis, digestive, skin and respiratory problems, piles, Hepatitis and fever |

### *Hakeem Chandan Lal and Sons (Darar Wale) Thana Sadar, G.T. Road Karnal, Haryana*

Hakeem Dilbagh Rai, non-institutionally qualified Unani practiti oner. He is the son of *Hakeem*

Exterior of clinic

Hakeem Dilbagh examining a patient

Chandan Lal of Unani Dawakhana. He prescribes marketed preparations.

| | |
|---|---|
| Number of patients | 30-40 patients daily |
| Diagnosis based on: | Pulse reading along with modern pathological markers. |
| Treatment | Specializes in the treatment of digestive diseases, Arthritis, respiratory and skin problems, piles, hepatitis and fever |

### *Vedic Upchar Sanstha, Delhi*

The Vedic Upchar Sanstha is located in New Delhi and practices four different systems – Unani, Ayurveda, Naturopathy and Allopathy.

When a patient arrives four experts take his / her history and decide which system of medicine would be the most beneficial. Treatment is provided according to the patient's condition.

Experts from Unani, Ayurveda, Naturopathy and Allopathy at the Vedic Upchar Sanstha

The *Sanstha* is known for treatment of diseases like Chronic Renal Failure and Hepatitis. Qualified specialists of various medical systems run all the OPDs. Hakeem Mohammad Javed provides Unani treatment to patients. He specializes in treatment of Hepatitis and Chronic Renal Failure.

The specialists provide their own medicinal preparations to the patients as well as prescribe medication from outside.

## Private Unani practice in Kashmir valley

### *Hakeem Javaid Shabnum*

View of clinic of Hakeem Javaid Shabnum

Hakeem Javaid Shabnum is a well known Unani physician at Srinagar district of Kashmir.

He runs a clinic named Khandani Dawakhana at Rambagh area of Srinagar locality.

| | |
|---|---|
| Qualification | B.A., RMP |
| No. of daily patients | 40-50 |
| Treatment | Joint pains, chronic cough, prostatitis, piles, hair related problems |
| Specialty | Sexual disorders |

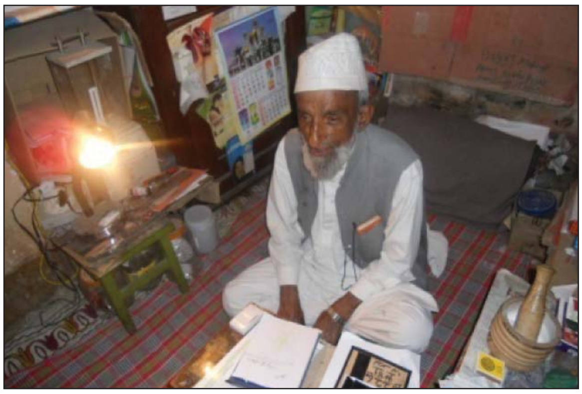
| | |
|---|---|
| Types of medicine | Both own prepared and marketed medicine |
| Style of diagnosis | Nabz (pulse) |
| Suggestions of the Hakeem | Measures should be taken to preserve rare and endangered medicinal plants. There should be research and development on relatively unknown herbs which may fill the gap in health delivery system. Mass awareness programme should be launched to make the people acquainted with Unani Medicine. |

## District Anantnag of Kashmir

### *Hakeem Mohd. Yousuf Parray*

Phone No. 09622609089
(RMP-467/111)

| | |
|---|---|
| Name | Hakeem M. Yusuf Parray |
| Location | Parray Medical Agency, Reshi Bazar, Anantnag, Kashmir |
| Qualification | Non-institutionally qualified. |
| No. of daily Patient | 70-100 |
| Specialty | Renal stones, Gynaecological disorders, Migraine, Arthritis |
| Type of medicine | Own preparation in powder (Safoof) form, Compound & Single drugs. He also prescribes GMP certified medicines. |
| Style of diagnosis | Nabz (Pulse) |
| Details | Anantnag is 60 km to the south of Srinagar. The Hakeem is the son of late Amma Parray a famous Hakeem of this district. He is not institutionally qualified but is registered with the ISM board since 1972. He has long experience of conducting Unani practice. |



Hakeem M. Y. Parray attending a patient inside his clinic

Board displaying names of Hakeem M.Y. Parray & Dr. S. Nisar

| | |
|---|---|
| Suggestions | Raw drug quality control should be mandatory. Government outlet for purchasing of herbal medicines should be available. There should be vigilance on duplicate medicines and price control. Advertisement of the Unani medicine should be done for awareness of the people. |

### *Dr. S Nisar Ahmad*

Dr. Nisar Ahmad is a young but well-known Unani doctor in Anantnag. He is Qualified and practicing Unani medicine since 2000.

| | |
|---|---|
| Name | Dr. S Nisar Ahmad |
| Location | Parray Clinic Reshi Bazar Anantnag Kashmir |
| Qualification | BUMS |
| No. of daily Patient | 50-70 |
| Specialty | Gastritis & Hepatitis |
| Type of medicine | Compound & single drugs. |
| Style of diagnosis | Nabz (Pulse) |

Dr. S Nisar Ahmad attending a patient at clinic

Dr. S Nisar Ahmad examining a patient at clinic

### District Pulwama

Pulwama is situated 40 km from Srinagar. This place has produced many Unani practitioners. The majority of the older Hakeems are no more but their work is being carried out by younger institutionally qualified Unani practitioners.

### *Dr. Asrar Ahmad Wani*

Dr. Asrar Ahmad Wani being interviewed by Dr. Rasikh Javaid

| | |
|---|---|
| Name | Dr. Asrar Ahmad Wani |
| Location | Chinar Dawakhana, New Hospital Road, Pulwama. |
| Qualification | BUMS, Ex HOD Medicine (Asian Medical College) Zakura, Srinagar |
| No. of daily Patient | 70-100 |
| Specialty | Polyarthralgia (Joint Pains), Gynaecological disorders, Depression, Hypertension, Hypothyroidism, Renal calculi. |

| | |
|---|---|
| Type of medicine | Compound drugs of GMP certified companies only. |
| Style of diagnosis | Modern parameters |

Chinar Dawakhana and names of Unani Doctors that practice there

### *Dr. Majid-ul Majid*

He is a qualified Unani doctor. He has been practicing Unani medicine since 2001. He is currently working as the Medical Superintendent of private Unani & Panchakarma Hospital at Anantnag. He attends the clinic only on Friday in Pulwama.

| | |
|---|---|
| Name | Dr. M Majid |
| Location | Dawakhana Hamdard Pulwama |
| Qualification | BUMS, Kanpur University |

Dr Majid attending a patient

| | |
|---|---|
| No. of daily Patient | 70-100 |
| Specialty | Renal stones, Gynaecological disorders |
| Type of medicine | Only Mufradat (Single drugs) |
| Style of diagnosis | Nabz (Pulse) &Mijaz (Temperament) |

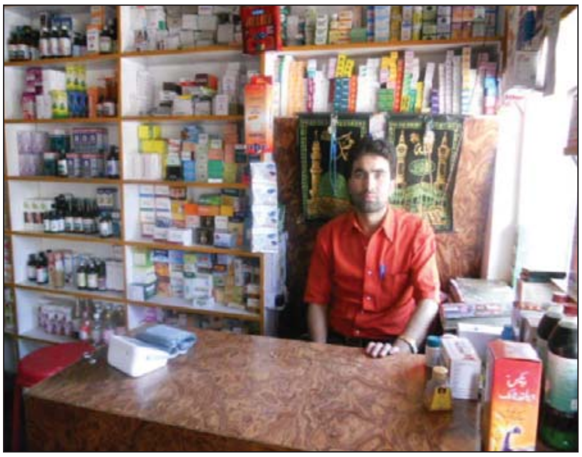
Patients waiting for their turn

Outside and inside view of the clinic

### *Dr. Shabir Ahmad*

He is a qualified Unani doctor. He has been practicing Unani medicine since 2001. He attends the clinic on Monday & Tuesday in Pulwama at Chinar Dawakhana and his practice is as follows:

| | |
|---|---|
| Name | Dr Shabir Ahamd |
| Location | Chinar Dawakhana, Pulwama |
| Qualification | BUMS, Kashmir University |
| No. of daily Patient | 100-120 |
| Specialty | Skin & Sex Specialist |
| Type of medicine | Mufradat (Single drugs) & Murakabat (Compound drugs) |
| Style of diagnosis | Modern parameters & Mijaz (Temperament) |



Dr Shabir Ahamd at the clinic

There were several other Unani clinics where Unani Medicine was being practiced. The following pictures display their shops and boards.

Dastageeri Dawakhana Pulwama

Iqra Dawakhana at Pulwama

Unani & Panchakarma Hospital at Natipora Srinagar Kashmir

Hakeem Sonaullah's Clinic at District Pulwama of Kashmir

Board of Unani Doctors Working at Unani & Panchkarma Hospital At Natipora Srinagar

Dawakhana Hamdard at Pulwama Kashmir

Inside View of a clinic Dispensing Unani &Ayurvedic compound drugs

View of some crude herbs & Compound drugs at a Unani shop in Kashmir

# Recommendations Relating to Practice of Ayurveda, Siddha and Unani Medicine

## Government Sector

The All India Institute of Ayurveda, New Delhi needs to have a strong full time Chief Executive Officer at this stage to oversee the infrastructural development and also to network with other institutes in the field of Ayurveda as well as other disciplines. At this point it would be better to position a non-practitioner as there is a huge need for attending to lateral linkages with several agencies in the Ministry of Health as well as the local bodies. The All India Institute of Medical Sciences and Indian Council of Medical Research have full time Deputy Directors of Administration, who are IAS officers of Joint Secretary Level. That is vitally needed here at this juncture as there is a huge need to look at infrastructure development besides which the focus of the Institute has to be steered from inception, The Institute should in fact be the focal point from where protocols for multidisciplinary therapeutic outcome studies are drawn up and some of the best clinical practice carried out.

## Government Hospitals

The carrying capacity of the IPD should be regulated in a way that high demand areas like Panchakarma are catered for in an efficient way. There is overcrowding in these areas which requires staggering of patient load. The hosekeeping and hygiene standards need enormous upgradation and the Government facilities should be the first to try and get NABH accreditation. Funds should be earmarked for this so that State Government hospitals can be renovated and modernized starting with 10 hospitals in the first year. Instead of giving funds to the Hospital, the Dept of AYUSH should ask the Hospital Services Consultancy Organisation HSCC to work out turn-key contracts which can be funded through HSCC once an MOU for handing over space is entered into with the selected hospital.

## Dispensaries

A comprehensive set of guidelines on what a government dispensary should provide are needed. At least one model dispensary should be there in one district in the state for others to follow. The local purchase of drugs needs to be facilitated so that there is no let-up in treatment which brings a bad name to the system.

## Creation of a District and City/Town Specific Directories of Practitioners and Panchakarma Clinics

Most people who would like to try ASU treatment do not have an idea of the names of the doctors; their addresses or telephone numbers or other details – whether institutionally qualified or otherwise. It would therefore serve a public purpose if the AYUSH/ISM officials at the state level are given funding to have a district-wise Directory created and updated every year. The work can be outsourced or got done departmentally but such a Directory would give an idea of the range of practice and also give credibility to the work that is going on. There could be a disclaimer with the following wording:

**Disclaimer:** *"This Directory has been compiled to give information about ASU practitioners and clinics. The entry of any practitioner's or clinic's name does not reflect any government endorsement."*

## Establishment of an Accreditation System for ASU Practitioners in the Private Sector at City/Town/District Level

In the next two years the Department of AYUSH should set up an accreditation system for giving accreditation to various facilities in the private sector. NABH certification will take a long time. Until now only one hospital in the whole of India (at Bengaluru) has got NABH accreditation. While that is a praiseworthy initiative, it is unlikely that more than a handful of private establishments would be able to aspire to and sustain the standards needed for NABH accreditation. But without any kind of authorization patients are swarming to ASU facilities and they have no way of knowing what they can expect in terms of treatment or care.

ASU does not have a counterpart either of the Indian Medical Association (IMA) or its district branches. As a result of this there is a lack of cohesion as also knowledge about who is doing what, in the name of medical practice.

The state AYUSH departments should be asked to give a numerical registration depending on whether it is a single practitioner clinic running only as an OPD or providing panchakarma or other procedures. This is necessary because most people who claim to offer Ayurvedic care, limit themselves to only a handful of procedures. Some have high quality technicians while others adopt unhygienic and slipshod ways of performing the procedures. Registration should be done for the procedures the clinic provides and the time given for each procedure and its cost need to be specified for the client's knowledge. The Registration should have a requirement for the physician in-charge to indicate whether the technicians are trained to conduct the procedures.

## Protecting the Name of Ayurveda

In the name of Ayurveda all kinds of clinics are being run and far from being a therapeutic procedure, it has now been reduced to a simple massage for relaxation. While there is nothing wrong with that, there is a need to sensitise the hotels and other high end massage parlours that certain kinds of practices have to be discussed with the patient and for example, doing sunbathing and swimming directly after undergoing Shirodhara is contra-indicated. Guidelines on this need to issue. In Thailand this is done even for simple back massage, footmassage, head and neck massage and the cost for 30 minutes, one hour onwards are specified outside the clinic. Today we have no such requirement.

It should be made mandatory for the clinics and indoor facilities to display which therapies would be provided using what kind of oils and medication. In the absence of that a lot of gimmicks are being marketed in the name of Ayurveda. This needs collaborative action on the part of both the Ministry of Tourism and the Department of AYUSH. However the possibility of harassment has to be avoided by engaging an agency which is asked to provide minimal guidance but keep oversight.

## Using Good Private Practitioners Imaginatively

The PI found that some of the practitioners were indeed doing very useful work and had developed competencies and skills which were highly sought after by the public in the areas of all three systems of medicine. The state and district ASU officers generally remain completely preoccupied with government facilities and other administrative functions. They hardly visit the private facilities or practitioners. However from the point of view of safeguarding the interests of the public and providing oversight to prevent cheating and fraud in the name of Ayurveda the government officials should be asked to set aside at least one day in the week to take stock of the private facilities and the work they do.

Many of the practitioners can be invited to demonstrate their skills like bone setting,marma therapy, cupping, in the National Institutes and also in the government colleges which would kindle an interest particularly among the undergraduates. Similarly, undergraduates should be sent in batches to watch how private clinics are being run by renowned practitioners. They can also be permitted to go and work as interns in such facilities after an MOU is entered into. There is no need to always emulate modern medicine hospitals where the conditions and requirements are of a completely different order.

**Speciality Clinics:** it is very clear from the visits undertaken by the PI and through discussion that the ASU systems have a strength in specific areas. But the duration of the treatment and the risks and benefits are not known widely. Efforts should be made to include good centres for providing speciality treatment under the CGHS because that would give recognition and legitimacy to the work that is going on. To give an example if speciality clinics were approved both in the government and the private sector for arthritis or asthma and the cost of the treatment is borne by CGHS, there would be several patients who would be interested. Though Panchakarma treatment at recognised places has been approved, it would be better to include it as recognised treatment for chronic back pain, computer shoulder, carpal tunnel syndrome, eye problems and mental afflictions. These are growing problems and there is a lot that ASU can do to restore normalcy in these kinds of patients.

## Recommendations Regarding Employment Opportunities for ASU Practitioners

There were suggestions that ASU treatment should be introduced in Railway hospitals and in the Hospitals run for public sector enterprises, and in the dispensaries of IITs, IIMs, and other large Government institutions. Likewise in the medical facilities set up by Central and State Universities.The Department of AYUSH should ask the State AYUSH Departments to draw up a panel of practitioners prepared on a city-wide basis after having the qualifications and competencies evaluated by a Board. The names could be given to large institutions starting with the Government sector desirous of setting up a facility for ASU consultation.

## Insurance Cover for ASU Treatment

Advice needs to be taken from the Insurance Regulatory Development Authority (IRDA) and medical Insurance Agencies. ASU treatment needs to be selectively included under the medical attendance rules for specific areas and this should not be confined only to hospitalization; outpatient treatment for specific diseases needs to be recognised at a few places for specified treatment. Employees' State Insurance Corporation (ESIC) also needs to take ASU treatment on board particularly for cases of accident, injury and trauma.

# 5

# Medicinal Plants

# Medicinal Plants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# 5

# Medicinal Plants[1]

## I. Uniqueness of Traditional and Folk Medicine

### Introduction

Since times immemorial, medicinal plants have been used to promote good health and treat diseases afflicting people. Tribal and folk healers have amassed a wealth of knowledge about the medicinal uses of plants which has been handed on from person to person mostly by word of mouth. These oral traditions are continuing even today but as more and more villagers migrate into urban areas, this precious knowledge is in serious danger of being lost forever. Although some of these healing prescriptions have been referred to in the classical texts, practical understanding remains inaccessible to most people. Documentation of local health traditions was made a priority decades ago primarily to preserve the knowledge from disappearing. Several organizations have endeavoured to preserve it, but gaps do remain. Not enough work has been done to examine the efficacy of various medicinal uses of plants used by tribal people and villagers; or to protect this knowledge from being purloined and claimed as a discovery. Most importantly, the people that have found these unique medicinal uses have not been given credit except by way of publishing the names of the communities and tribal groups while publishing monographs.

In this sub-chapter an effort has been made by the PI to examine how unique the usage of specific plants by the tribal and folk people has been. The examination is miniscule but the findings point towards originality which should be treasured. This effort is only to motivate policy makers to seek a change in direction in a way that enhances the enormous benefits that could accrue.

### Documentation of Tribal and Folk Medicine Practices by CCRAS and CCRUM

Many decades ago the research Councils – the Central Council for Research in Ayurveda and Siddha (CCRAS) and the Central Council for Research in Unani Medicine (CCRUM) understood the outstanding opportunity that was available through preservation and revival of such traditional knowledge.

CCRAS began research on the custodians of indigenous knowledge from the 1970s by undertaking extensive surveys through 17 survey units located at different parts of the country.[2]

Information was also collected by the Council's Tribal Research Units, Mobile Clinical Units and health centers. Each survey unit undertook a detailed study of the ethno-medicinal usage of plants by different communities. For example the CCRAS survey unit situated in Junagadh in Gujarat surveyed tribes like the *Bhils*, *Garasia*, *Siddi*, *Bharwad*, who lived in the tribal pockets in Haripar, Piper Toda, Jambuda, Koteshwar, Vijarkhi and Motathavaria Pipladevi.

Based on the research outcomes, the Council published a book called *An appraisal of Tribal-Folk Medicines* in 1999 containing nearly 2600 folklore medicinal practices.

1. This chapter was co-authored by Dr. Ashok B.K., Research Assistant, Gujrat Ayurved University, Jamnagar, Gujarat and Mr. Chinmay Rath, Senior Research Fellow (Botany), CCRAS, New Delhi. However the recommendations at the end of each of the three sub-chapters are exclusively those of the PI.

2. Bengaluru (Karnataka), Bhubaneswar (Orissa), Kolkata (West Bengal), Guwahati (Assam), Gwalior (Madhya Pradesh), Itanagar (Arunachal Pradesh), Jaipur (Rajasthan), Jammu (J&K), Jhansi (Uttar Pradesh), Junagadh (Gujarat), Mandi (Himachal Pradesh), Nagpur (Maharastra), Patna (Bihar), Tarikhet (Uttaranchal), Thiruvanthpuram (Kerala), Vijayawada (Andhra Pradesh) and Palayamkottai (Tamil Nadu).

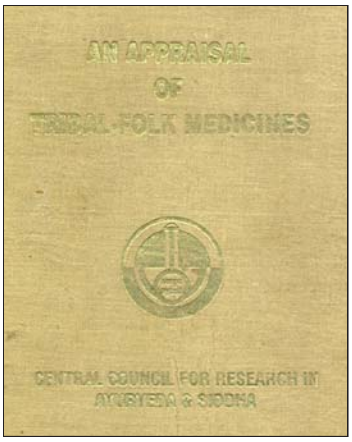



Figure 1. A book "*An appraisal of Tribal-Folk Medicines*" published by CCRAS, 1999.

Under each folklore practice enumerated, the local name of the plant is followed by its Sanskrit name, Botanical/ English name, the area of collection, the part of the plant used and the mode of administration. The compendium is cryptic and uninspiring to look at but represents primary research which was undertaken quite systematically and painstakingly.

The Central Council for Research in Unani Medicine (CCRUM) also took up similar work[3] and, as a result of the surveys, it published over 11,845 folk claims for treating a wide variety of disease conditions and showing the economic uses of thousands of plants. Based on this information, the Council has so far brought out seven publications:

1. *Medicinal Plants in Folklores of Northern India*, Part-I (2001) details of 464 folk drugs.
2. *Medicinal Plants in Folklores of Southern India* (2001) details of 202 folk drugs.
3. *Medicinal Plants in Folklores of Bihar & Orissa* (2001) details of 418 plant species covering 1484 folk prescriptions.
4. *Medicinal Plants in Folklores of Kashmir Himalaya* (2001) details of 181 folk drugs.
5. *Medicinal Plants in Folklores of Northern India*, Part-II (2006) details of 207 plant species covering 291 folk prescriptions.
6. *Medicinal Plants in Folklores of Southern India,-* Part-II (2006) includes 275 plant species covering 686 folk prescriptions.
7. *Medicinal Plants in Folklores of Orissa*, Part-II (2006) includes 252 plant species covering 652 folk prescriptions.

## Survey Methodology of Research Councils

The survey teams of CCRAS and CCRUM comprised of a botanist, an Ayurvedic/Unani physician, a field assistant and a driver. Each survey unit of the Council was provided with a vehicle. One is referring to surveys conducted inside forests and village woodlands some 20-30 years ago when communication systems on land and through the telephone were rudimentary.

During the survey the botanist identified the medicinal plants using his knowledge of the regional flora. The final identification and authentication was done after comparison with published literature and herbarium sheets maintained in the regional and national herbaria. Each herbarium specimen was listed with its botanical name, family, local name, ASU name (wherever available), habitat, date of collection, locality, voucher specimen and the medicinal use(s) as observed. The identity was confirmed by matching the samples at reputed herbariums viz., Central National Herbarium (CNH), Howrah; Forest Research Institute (FRI), Dehradun; Botanical Survey of India (BSI), Coimbatore; Regional Research Laboratory (RRL), Bhubaneswar etc. The voucher specimens were docketed in the form of herbarium sheets by adopting the standard procedure. The herbarium sheets and plant specimens were deposited in designated institutes of CCRAS/ CCRUM for future reference.

The physician that accompanied the botanist diagnosed the disease condition for which the plants were being used. The identification of a particular ailment was done through consultation with local people and observation of the symptoms. The folk healers and elderly persons living in the area were interviewed and information regarding the local use of the plants was noted carefully. Sometimes one or two villagers were engaged to stay with the survey team and work as conduits to access the community.

The work was not easy. According to Dr. OP Mishra,[4] who went on such visits over a better part

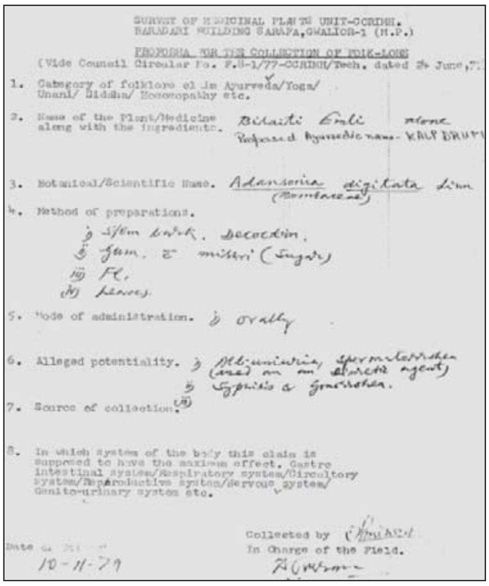
3. Survey of Medicinal Plants Units of the CCRUM are functioning at five places – Aligarh (Uttar Pradesh), Bhadrak (Orissa), Chennai (Tamil Nadu), Hyderabad (Andhra Pradesh) and Srinagar (Jammu & Kashmir).
4. Former Assistant Director (Botany), CCRAS, Department of AYUSH, Ministry of Health & Family Welfare, Government of India, New Delhi.

Figure 2. Seven different books published by CCRUM

of his career, the forests were inhospitable. Mosquitoes made life difficult and the kindness of the forest rangers alone could give them overhead shelter for a few days. The team had to convince the forest dwellers to overcome their initial hesitation about such visitations but eventually it was possible to gather data on the local name of the plant, the part used, its common local uses, method of preparation of the medicine, the way of application, dose and duration of treatment. For work undertaken in the 1980s and 1990s this must have called for remarkable perseverance.

## Use of Medicinal Plants by Tribal & Folk Healers

In August 2009, the Principal Investigator who had written the foreword for some of these monographs when she was Secretary in the erstwhile Department of Indian Systems of Medicine decided to investigate how many of the plants listed in the eight volumes of CCRAS and CCRUM monographs were referred in the Ayurvedic, Unani and Siddha classical texts. A study of even a few classical texts would have been daunting. Fortunately the Traditional Knowledge Digital Library (TKDL) had entered all


SURVEY OF MEDICINAL PLANTS UNIT-CCRIMH.
BARADARI BUILDING SARAFA, GWALIOR-1 (M.P.)

PROFORMA FOR THE COLLECTION OF FOLK-LORE
(Vide Council Circular No. F.8-1/77-CCRIMH/Tech. dated 24 June, 7…

1. Category of folklore ol in Ayurveda/Yoga/ Unani/ Siddha/ Homoeopathy etc.
2. Name of the Plant/Medicine along with the ingredients. Bilaiti Emli alone
Proposed Ayurvedic name - KALP BRU…
3. Botanical/Scientific Name. Adansonia digitata Linn (Bombacaceae)
4. Method of preparations.
i) Stem bark. Decoction.
ii) Gum. c̄ mishri (Sugar)
iii) Fl.
iv) leaves.
5. Mode of administration. i) orally
6. Alleged potentiality. i) Albuminuria, spermatorrhoea (used as an diuretic agent)
ii) Syphilis & Gonorrhoea.
7. Source of collection.
8. In which system of the body this claim is supposed to have the maximum effect. Gastro intestinal system/Respiratory system/Circulatory system/Reproductive system/Nervous system/ Genito-urinary system etc.

Date
10-11-79

Collected by
In Charge of the Field.

Typical Note Sheet of field visit

Typical Herbarium Sheet of field visit

Figure 3. Field notes, herbarium specimens held in a standard depository.

the plants used in the three Indian systems digitally. The plants listed in the CCRAS and CCRUM monographs were made into a list and scanned with reference to the Traditional Knowledge Resource Classification (TKRC) that is the foundation of the Traditional Knowledge Digital Library (TKDL). TKRC is a modern classification based on system of the International Patent Classification (IPC) and specially developed in digitized form for the Indian Systems of medicine.

The TKDL team under the leadership of Mr. VK Gupta,[5] was requested to facilitate scanning the lists of plants used in tribal and folk medicine by comparing the names of the folklore species with the TKRC list of plants mentioned in the ASU classical texts. This list was scanned in August 2010 and for the second time in October 2010. During the first Phase 148 texts were used and during the second Phase 173 texts including those which had been added were consulted. Thereby in all 2.27 lakh formulations of ASU were scanned.

5. Senior Adviser and Director, Traditional Knowledge Digital Library, CSIR, New Delhi

As a result of this exercise 122 plants could be located which did not seem to find place in the Ayurveda, Unani or Siddha texts. But even so, in respect of 28 plants, the exact species used in folklore were not known; hence only 94 plants remained on which a preliminary study was possible. The aim of doing this search was to try and look at the medicinal uses of tribal and folk healers compared to what botanical web sites had to say on the known, documented use of these plants elsewhere in India and the world.

After screening and examining those 94 species and taking individual plant species into consideration, four species were identified which had not been mentioned in any of the classical texts, but were extensively used by folk practitioners to treat a variety of ailments.

Information on these four plants was gathered from available botanical sites to ascertain whether these plants are in use elsewhere and if so, for what purpose they were being used.

The selected plants were:-

| No. | Local name | Botanical name and family |
|---|---|---|
| 1 | Bischubuti | *Girardinia heterophylla* Decene. (Urticaceae) |
| 2 | Bui | *Aerva tomentosa* Forsk. (Amaranthaceae) |
| 3 | Nagad Bavachi | *Ocimum americanum* L. (Lamiaceae) |
| 4 | Dantyari | *Scoparia dulcis* L. (Scrophulariaceae) |

The medicinal use of these four plants found in botanical sites and as documented by CCRAS/ CCRUM were then compared:-

## 1. *Girardinia heterophylla* Decene.

| | | |
|---|---|---|
| Common name/ Local name | : | Bichchhoo, Bishcubuti |
| English name | : | Indian Stinging Nettle, Himalayan, Nettle, Nilgiri nettle |
| Hindi name | : | Bichchhoo |
| Botanical name | : | *Girardinia heterophylla* Decne. |
| Synonyms | : | *Girardinia diversifolia; Urtica heterophylla* |
| Family | : | Urticaceae (Nettle family) |
| Part used | : | Leaf |
| Area of collection | : | Gondla (Himachal Pradesh) |
| Type of disease | : | Skin disease |
| Mode of administration | : | Leaves are cooked and eaten as vegetable |

(An appraisal of Tribal Folk Medicines. CCRAS publication; 1999. p. 258)

This plant is found in the wastelands and shrubberies at a height of 800 - 2700 meters in the Himalayas, in moist, shady, forested areas and at altitudes of 1200 - 3000 meters in Nepal, (http://www.naturalmedicinalherbs.net//) and also in different parts of India (Hooker J D, editors. The Flora of British India. Vol. V. L. Reeve and Co. Ltd. England; 1885.p.550).

*Eating the leaves for medicinal purposes as a vegetable appears to be a unique use of this plant as search engines which were investigated showed completely different medicinal usage.*

These are indicated in the footnote below.[6]

6. a. Decoction of the root and basal stem is mixed with wine and drunk as a cure for malignant boils (http://www.naturalmedicinalherbs.net//). b. The decoction of the roots, mixed with *Centella asiatica*, is used to treat gastric troubles (http://www.naturalmedicinalherbs.net//). c. The juice of the root is used to treat constipation (http://www.naturalmedicinalherbs.net//). d. The ashes of the plant are applied externally in the treatment of ringworm and eczema (http://www.naturalmedicinalherbs.net//). e. The fresh juice of the leaves is applied externally in the treatment of headaches and swollen joints (Chopra R N, Nayar S L,Chopra I C, editors. Glossary of Indian Medicinal Plants (including the supplement). Council of Scientific and Industrial Research. New Delhi; 1986. p. 125 and Kirtikar K R, Basu B D, editors. Indian Medicinal Plants. Vol. III. II ed. Lalit Mohan Basu. Allahabad; 1984. p. 2298). f. A decoction of the plant is used to treat fevers (Chopra R N, Nayar S L,Chopra IC, editors. Glossary of Indian Medicinal Plants (including the supplement). Council of Scientific and Industrial Research. New Delhi; 1986. p. 125). g. Dried or boiled leaves are used as diuretic, anti- rheumatic, anti-allergic and as galactogogue for lactating mothers (http://www.flowersofindia.net//). h. The leaf juice of this plant is used in gonorrhea, fever, headache and swollen joints. Locally in case of injuries a fresh root paste is prepared and applied on affected parts (Dhiman A K. Medicinal plants of Uttaranchal State. 1999: 426).

## 2. *Aerva tomentosa* Forsk.

| | | |
|---|---|---|
| Common name/ Local name | : | Bui |
| English name | : | Javanese Wol Plant |
| Hindi name | : | Bui |
| Botanical name | : | *Aerva tomentosa* Forssk. |
| Synonyms | : | *Aerva javanica* (Burm.f.); *Aerva persica* (Burm.f.) Merr.; *Iresine javanica* Burm.f. |
| Family | : | Amaranthaceae |
| Part used | : | Whole plant |
| Area of collection | : | Jaipur (Rajasthan) |
| Mode of administration | : | Ash of the plant mixed with gingili oil (*Tila Taila*) is applied on burns |

(An appraisal of Tribal Folk Medicines. CCRAS publication; 1999. p. 40)

This tomentose herb extensively grows in north-west India mainly Thar desert region, plains of Punjab, Madhya Pradesh, Gujarat, and also in other countries like Myanmar, Srilanka, Arabia, East and West of Tropical Africa (The Wealth of India (raw materials).Vol.I. National Institute of Science Communication (NISCOM), Council of Scientific and Industrial Research (CSIR), New Delhi; 1995.).

*The mode of administration which the survey brought out was unique. No one is reported to have used the ash of the plant mixed in oil for treatment of burns.*

The medicinal uses available from search engines are given in the footnote.[7]

## 3. *Ocimum americanum* L.

| | | |
|---|---|---|
| Common name/ Local name | : | Nagad Bavachi |
| English name | : | Hoary Basil |
| Hindi name | : | Ran Tulsi |
| Botanical name | : | *Ocimum americanum* L. |
| Family | : | Lamiaceae |
| Part used | : | Seeds |
| Area of collection | : | Khareri, Rajasthan |
| Type of disease | : | Diarrhoea |
| Mode of administration | : | Powder of seeds is administrated orally with water. |

(An appraisal of Tribal Folk Medicines. CCRAS publication; 1999. p. 35)

This plant is widely distributed in the plains and lower hills of India (Hooker, JD, editors. The Flora of British India. Vol. V. L. Reeve and Co. Ltd. England; 1885. p. 607).

*However, the use of the powder of seeds for curing diarrhoea has not been listed and again shows the novel use of the Khareri folk/tribal people of Churu district of Rajasthan.*

The medicinal uses available from different search engines are listed in the footnote.[8]

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7. a. Decoction of flowers and seeds applied externally against swellings. b. Woolly seeds stuffed in pillows relieve headache and protective against rheumatism (http://www.science20.com/humboldt_fellow_and_science/blog//). c. Decoction of the plant is used to remove swelling (Chopra R N, Nayar S L,Chopra I C, editors. Glossary of Indian Medicinal Plants (including the supplement). Council of Scientific and Industrial Research. New Delhi; 1986. p.8 and Kirtikar K R, Basu B D, editors. Indian Medicinal Plants. Vol. III. II ed. Lalit Mohan Basu. Allahabad; 1984.p.2064.) d. Herb is diuretic and demulcent (Anonymous, The Wealth of India (raw materials).Vol.I. National Institute of Science Communication (NISCOM), Council of Scientific and Industrial Research (CSIR), New Delhi; 1995.) e. The seeds are used for rheumatism (Singh, Pandey. J Econ Tax Bot. 1980; 1:137-147.). f. Whole plant decoction is diuretic and demulcent. Leaf paste applied to treat wounds. Leaf decoction used as emetic and purgative. Seed paste applied to treat headache and rheumatism (Raveedra R, Martin P. Ethnomedicinal plants. AGROBIOS. Jodhpur. 2006; 212.) g. Leaves are used in gastric complaints (Jain S K, editors. Dictionary of Indian Folk Medicine and Ethnobotany. 1991; p.15)
8. a. Leaves made in to paste in parasitical skin diseases and applied to the finger and toe nails during fever when the extremities are cold (Chopra R N, Nayar S L,Chopra I C, editors. Glossary of Indian Medicinal Plants (including the supplement). Council of Scientific and Industrial Research. New Delhi; 1986. p. 178.). b.The plant leaves is taken thrice a day to cure dysentery (Sen SK, Behera L M. Ethnomedicinal plants used by tribals of Bargarh district to cure diarrhea and dysentery. Indian J Trad Knowl. 2008; 7(3): 425-428.).c.*Pawar*, *Bhil* and *Pardhi* tribes of Satpuda region of Dhule and Jalgaon districts of Maharashtra (this plant which is locally known as Gandhanya gavat) mostly used for parasitic flies, leaves are rubbed over body of cattle and leaf juice is used in cuts and wounds (Jain DL, Baheti AM, Jain SR, Khandelwal KR. Use of medicinal plants among tribes in Satpuda region of Dhule and Jalgaon districts of Maharashtra—An ethnobotanical survey. Indian J Trad Knowl. 2010; 9(1):152-157.). d.The tribals of the district Bargarh district of Orissa (viz., Sahanra, Binjhal, Gond and Kondh tribes) use this plant for the treatment of diarrhoea and dysentery (Sen SK, Behera L M. Ethnomedicinal plants used by tribals of Bargarh district to cure diarrhea and dysentery. Indian J Trad Knowl. 2008; 7(3): 425-428.).

## 4. *Scoparia dulcis* L.

| | | |
|---|---|---|
| Common name/ Local name | : | Dantyari |
| English name | : | Sweet broomweed |
| Hindi name | : | Mithi patti, Ghoda tulsi |
| Botanical name | : | *Scoparia dulcis* L. |
| Family | : | Scrophularaiaceae |
| Part used | : | Root |
| Area of collection | : | Gwalior (M.P.) |
| Type of disease | : | Dental Pain |
| Mode of administration | : | Root is chewed to stop toothache |

(An appraisal of Tribal Folk Medicines. CCRAS publication; 1999. p. 66)

This plant is a perennial medicinal herb distributed throughout the tropical and subtropical regions and is a native of tropical America. (Riel MA , Kyle DE , Milhous WK . Efficacy of scopadulcic acid A against *Plasmodium falciparum* in vitro. J Nat Prod. 2002; 65: 614-615.)

*The use of the plant's root to reduce toothache pain appears to be unique.*

The medicinal uses available from different search engines are given in the footnote.[9]

## Discussion and Conclusion

The foregoing research shows that indeed the knowledge about the properties of Medicinal plants held by tribal and folk people is enormous. The use of the plants could be unique as the foregoing four examples have shown. Therefore, this needs to be given a useful direction that goes beyond mere documentation and storage of data.

India is fortunate to have a rich reserve of indigenous knowledge on the use of medicinal plants as a multitude of local healers still practice traditional medicine. However, this important source of knowledge is currently under threat. There are over 400 tribal communities besides, grazers, shepherds and other villagers that live close to nature. These people are the real custodians of the medicinal plants which mainly grow in the forests. Out of 45,000 species of wild plants, these tribal and village communities are reported to possess knowledge of about 9,500 species. Of these, medicinal plants account for over 7,500 species – a huge number by all accounts. (Ethnobiology in India. A status Report – All India Coordinated

9. a.Leaves were the most frequently utilized plant part of *Scoparia dulcis* and most herbal remedies were prepared as paste and applied externally; in some cases medicinal preparations were also administered orally. Leaf were ground into a paste and applied topically on affected places to heal wounds. (Ayyanar M, Ignacimuthu, S. Herbal medicines for wound healing among tribal people in Southern India: Ethnobotanical and Scientific evidences. International JApplied ResNatProd. 2009; 2(3): 29-42.). b. Indigenous people in Ecuador consume tea of the entire plant to reduce swellings, aches and pains. The Tikuna Indian women drink the plant decoction for three days each month during menstruation as a contraceptive and/or to induce abortions. The indigenous tribes in Nicaragua use a hot water infusion and/or decoction of the leaves (or the whole plant) for stomach pain, for menstrual disorders, as an aid in childbirth, as a blood purifier, for insect bites, fevers, heart problems, liver and stomach disorders, malaria, sexually transmitted diseases, and as a general tonic. (The Healing Power of Rainforest Herbs. Square One Publishers. New York; 2005.) c. An infusion of the leaves is used in the fever, cough and bronchitis and as a gargle for toothache. Hot infusion is diuretic and cold decoction is used against kidney complains. A decoction of leaves and roots is used in fever (Kirtikar K R, Basu B D, editors. Indian Medicinal Plants. Part. II. Allahabad; 1823.), (Jain. EconBot. 1965: 19-44.), (Anonymous, The Wealth of India (raw materials).Vol.IX. National Institute of Science Communication (NISCOM), Council of Scientific and Industrial Research (CSIR), New Delhi; 1995.). d. This plant has been used as a remedy for treating diabetes mellitus in India and hypertension in Taiwan. Traditionally, the fresh or dried plant has been used as a remedy for treating stomach ailments, hypertension, diabetes, inflammation, bronchitis, hemorrhoids, and hepatosis, and as an analgesic and antipyretic agent (Ratnasooriya WD, Jayakody JR, Premakumara GA, Ediriweera ER. Antioxidant activity of water extract of *Scoparia dulcis*. Fitoterapia. 2005; 76:220-222.), (Riel MA , Kyle DE , Milhous WK. Efficacy of scopadulcic acid A against *Plasmodium falciparum* in vitro . J Nat Prod. 2002; 65:614-615.). e. Hot water infusion and/or decoction of the leaves or whole plant is used medicinally by indigenous tribes of Nicaragua to treat malaria, stomach disorders, menstrual disorders, insect bites, fevers, heart problems, liver disorders, and venereal disease. It has been used for blood cleansing, as an aid to child-birth, and as a general tonic (Latha M, Pari L , Sitasawad S, Bhonde R. Insulin-secretagogue activity and cytoprotective role of the traditional antidiabetic plant *Scoparia dulcis* (Sweet Broomweed). Life Sci. 2004; 75:2003-2014.). f. The herb is used in Brazilian folk medicine to treat bronchitis, gastric disorders, hemorrhoids, insect bites, and skin wounds. The herb is used in Asian medicine to treat hypertension (Freire SM, Torres LM, Souccar C, Lapa AJ. Sympathomimetic effects of *Scoparia dulcis* L. and catecholamines isolated from plant extracts. J Pharm Pharmacol. 1996; 48:624-628.). g. Plant is used as anti-emetic and in the conditions like gout, gonorrhoea, rheumatism, eye disorders (Jain SK, editors. Dictionary of Indian Folk Medicine and Ethnobotany. 1991; p.15) h. An anti-diabetic compound emellin has been reported in the leaf and stem of fresh green plant (Anonymous, The Wealth of India (raw materials). Vol.IX. National Institute of Science Communication (NISCOM), Council of Scientific and Industrial Research (CSIR), New Delhi; 1995.)

Research Project on Ethnobiology (Ministry of Environment and Forests, Government of India, New Delhi, 1994).

To save this rich repository of traditional folk knowledge, many Central and State government organizations like CCRAS and CCRUM, the Tropical Botanic Garden & Research Institute (TBGRI), Thiruvananthapuram and several NGOs, such as Foundation for Revitalization of Local Health Traditions (FRLHT), Bengaluru, Herbal Folklore Research Centre (HFRC), Tirupati; Rural Communes Medicinal Plants Conservation Centre (RCMPCC), Servants of the People Society, Lajpat, Deendayal Research Institute, Chitrakoot, Indian Society for Youth Development, Chandigarh; Dr. Hedgewar Birth - Centenary Service Society, Jabalpur; Vanavasi Kalyan, Bengaluru, etc. are working on community-based participatory approaches to support the conservation of medicinal plants and folk medicinal knowledge. Among them the documentation of FRLHT has received extensive coverage. This organization has promoted 'green health' among rural communities by facilitating the establishment of over 200,000 home herbal gardens and dozens of community gardens. It has also supported the creation of a network of over 250 Taluka based folk healer associations across seven States in India. The foundation presently has its main focus on outreach and to a comparatively lesser extent on education and research. TBGRI also has done substantial work since 1979 by carrying out ethnomedical surveys among the tribal/folk healers of different districts in Kerala. The documentation is reported to cover 545 single drugs and 15 simple combinations.The districts brought under this study include Palakkad, Thiruvananthapuram, Wayanad, Idukki and Kottayam.

Although a lot of work on folk medicinal practices has been carried out by many research organizations, it has been confined to specific regions of the country. However the work done by CCRAS/CCRUM covers several parts of the country and spans nearly 40 years. At present eight peripheral units of CCRAS and six peripheral units of CCRUM are working on various aspects of traditional knowledge. The surveys have shown that the same plants are used by different folk practitioners to treat different ailments in different regions. Thus, because of its wide canvas the work of the Councils is unique. It deserves to serve the public more meaningfully.

To bring these medicinal plants which are not referred in the classical texts but are extensively used in tribal medicine and folklore, a detailed project on "Extrapharmacopeial drugs" is underway in CCRAS with special emphasis on the standardization aspect. This is a welcome development. In the next two sub-chapters the linkage with raw drug trade and the demand and supply of medicinal plants is made. Also how enormous knowledge that has been retrieved and stored can be used to stimulate further enquiry.

# II. Raw Drug Trade – Interaction with Dealers

## Introduction

There is evidence of growing commercialisation in the manufacture, marketing and export of plant and plant based products. The supply chain of medicinal plants is informal, casual and sometimes even negligent. As a result, in the absence of macro level data about consumption patterns by different users, including manufacturers and medical practitioners of the ASU systems, it is difficult to plan for conservation or cultivation, except by rule-of-thumb.

Sustainability issues have also become a matter of serious concern. Exporters of medicinal plants would like to continue to export plants in high demand, while there are equally strong groups that warn against over exploitation of forest produce. More regulation is fraught with increasing the dangers of hoarding and black marketing. An atmosphere of free-for-all ultimately impacts on the quality of ingredients making public health and safety concerns a cause for anxiety.

In order to understand how the raw drug dealers operate, and how greater coordination can be brought about between the collectors of medicinal plants and the dealers, the Principal Investigator decided to meet with the raw drug dealers at Khari Baoli in Chandni Chowk, Delhi. Khari Baoli is just one of the large *mandis* in India, the other two big ones being located at Amritsar and Chennai.

The meeting was held on the 15th December, 2010 at Sales Office-2, Gopal Bhavan, Ramdev Market, Khari Baoli. The details of those who attended the meeting are at Annexure-I.

## Methodology used to elicit information

Before the meeting a questionnaire (Annexure-II) had been sent to three associations of dealers of medicinal plants. The questions included:

1. How did you acquire knowledge about medicinal plants? Was it passed down as a part of family tradition or was it through self education?
2. How many different species are used on an average? How do you sort out and process the raw material for sale?
3. Are some plant species becoming extinct or rare and what should be done according to you?
4. How do you determine the price of raw material?
5. Do you think the responsibility for certification of drug quality and authenticity should be given to the provider or the manufacturer who purchases the raw drugs?
6. What do you suggest should be done to modernise your trade and would you be willing to participate in a scheme whereby only packed, labelled and certified raw drugs can be sold with a Best Before date?

## Reaction of the dealers

Initially the dealers were not clear about the purpose of the visit and some of them tried to speak in an antagonistic way. It had to be explained that the purpose was not to police what they were doing but to find a way of improving the supply chain. The dealers indicated that they purchased the drugs without any treatment or processing and the critical areas related to the seasonality of plants which made continuous supply difficult. All the dealers admitted that there was significant variation and fluctuation in the quality and prices of raw drugs. Often the purchasers (representative of manufacturers) were unwilling to pay a fair price and therefore the traders sold the quality that the buyers were willing to pay for.

The dealers identified the quality of raw drugs through their own experience and organoleptic characters. Almost all the dealers recommended that drug testing laboratories should be recognised and regional pharmacognosy laboratories should be set up where the identification and certification of raw material could be done before the dealers sold the drugs to industry. It was their view that manufacturers should be made responsible for maintaining quality.

Regarding modernisation, they gave examples of facilities set up by the Agricultural Produce Marketing Committees (APMCs) for processing food items and strongly wanted the same approach to be adopted for medicinal plants. They felt that godowns with sorting space should be provided and persons working in the *mandis* should be properly trained.

They pointed out that in many parts of the country the produce collected from forests could not be transported without several changes en route as very often road connection was not available. With several change of hands, the produce deteriorated in transit. The suggestions they made included the following:

- Export of medicinal plants should be banned. On the other hand some dealers stated that the existing ban on several prime plant ingredients used in ISM, had led to surreptitious export and sale in neighbouring countries like Nepal and Pakistan.
- All drugs (medicinal plants) should be brought under price control when they are used as ingredients for medicine. A national plant-based medicines pricing authority should be set up.
- All drugs that come from cultivated sources should be exempt from taxes and duties.
- All the dealers wanted a cold storage facility to be established for the storage of raw drugs.

The suggestions of the raw drug dealers and the observations of the PI have been dealt with in detail in the next sub-chapter on Demand and Supply of Raw Drugs.

After the meeting the PI accompanied by the research officers and a few dealers visited some of the shops stocking and selling medicinal plants. The manner in which the merchandise was stocked was disturbing. The interiors of the shops were dark and the walls were grimy. Gunny sacks containing dry leaves, roots, barks and seeds were lying haphazardly on the floor. There was dust almost everywhere. Even the botonist could not identify the contents lying in the open sacks.

The traders were not perturbed by the visit or by questions posed to them and emphasized that it was for Government to find a proper place for them to sort, stone and label the produce. Since this is only one link in the supply chain, comprehensive recommendations are made subsequently.

# III. Demand and Supply of Raw Drugs

Medicinal plants are the oldest known healthcare essentials. In India, about 2500 species are used for medicinal purposes, and about 90 percent of the raw material base used in ASU and traditional medicine is plant based. The drugs of the herbaceous categories are frequently used as whole plants, but it is common to use specific plant parts like the root, stem, leaf, flower, seed, fruit, bark of a stem, root wood, exudates or gum for making single drugs.

The National Medicinal Plant Board was established in response to a felt need for co-ordinating all aspects of the Medicinal Plant sector. The Government has not only set up the organisation with an independent CEO, but NMPB has persuaded the states to establish State Medicinal Boards. The current status of the work done is commendable. But there seems to be a need to use available technical and organisational resources more forcefully because there is an urgent necessity to bolster the safety profile and public acceptance of ASU drugs. There is a need for a clear and efficiently managed process which requires management at several levels. The questions the PI had asked the CEO and the responses, he gave are given in **Annexure-II & III**.

The PI met the CEO NMPB and requested for information relating to the major tangible achievements of NMPB in terms of improvement in supplies of raw drugs in high demand; the views on becoming a certification agency and to indicate examples of at least 3 highly successful projects that had performed well with assistance from NMPB, giving reasons for success and related issues. The response of the CEO NMPB at **Annexure II** provides data on the work done or planned to be done. However the details of oversight of collection, grading, packaging testing, certification with best before date have not been mentioned.

A nationwide study carried out by the Foundation for the Revival of Local Health Traditions (FRLHT), Bengaluru sponsored by the National Medicinal Plants Board (NMPB), which assessed the demand and supply of medicinal plants revealed that:

- The annual demand of botanical raw drugs in the country is 3, 19,500 MTs. The quantity estimated to be sourced from cultivation was 14,400 MTs.
- Annual trade value was estimated to be around Rs.1, 069 crore.
- 178 species used in trade used volumes in excess of 100 MTs per year.
- Out of the 178 species, 34 were reported to be sourced through cultivation, 46 from waste/fallow lands, 91 from forests and the rest were imported.
- Out of the 178 species in high demand, 21 species have been categorized RET (rare, endangered and threatened).

(Ved, D.K. & G.S. Goraya, 2007. Demand and Supply of Medicinal Plants in India. NMPB, New Delhi & FRLHT, Bangalore, India.)

A recent study, brought out by the Associated Chambers of Commerce and Industry (ASSOCHAM), has shown that the domestic herbal industry will grow rapidly and by 2015 it is expected that the size of the domestic market would rise to Rs. 15,000 crore, reflecting a compound growth rate of over 20 percent.

| Markets | Present Demand | Projected Demand (for 2015) |
|---|---|---|
| Europe | US$ 35 Billion | US$ 70 Billion |
| North America | US$ 6.5 Billion | US$ 25 Billion |
| China | US$ 4.0 Billion | US$ 12 Billion |
| India | US$ 1.5 Billion | US$ 3 Billion |
| Others | US$ 13 Billion | US$ 30 Billion |
| **Total** | **US$ 60 Billion** | **US$ 140 Billion** |

[(http://www.trade india.com//) reported on 17.04.2011. (SME Times News Bureau, 06 March 2010.)]

The rising demand for plant-based drugs is creating heavy pressure on selected high-value medicinal plant populations found in the wild. Several of these medicinal plant species have slow growth rates, low population densities, and narrow geographic ranges. These factors increase pronenes to extinction. Increased use of medicinal plants coupled with the harsh harvesting methods are threatening to sustainability. Collection is associated with the livelihoods of tribal and rural communities that overharvest to earn more. The raw-material supply situation is already unsustainable in respect of certain key species.

The quality of medicinal plants has also become a major concern following reports of heavy metal content in Indian herbs. Adulteration and substitution of plants is a serious problem. Some of the common adulterants and non-permissible ingredients include botanicals, toxic metals, microorganisms, microbial toxins, pesticides, and fumigation agents. One study showed that 64% of samples collected in India contained significant amounts of lead (64% mercury, 41% arsenic and 9% cadmium). (Saper RB, Kales SN, Paquin J et al RS **Heavy Metal Content of Ayurvedic Herbal Medicine Products** *JAMA* 2004; 292:2868-2873). Although rebuttals have been made those have not had much impact on public perception.

Trade in medicinal plants is highly complex as it involves different individuals at different stages of marketing. A typical chain of such transactions starts with the collection of plant materials from the wild. The collectors are tribal people, villagers, including women and children. The material is collected at a local hub and a network of local traders delivers the medicinal plants to "road head centers" which lead to regional wholesale markets located in bigger towns or cities. The plants are often plucked indiscriminately in order to earn a little more.

The major problems include:

- Trade in crude drugs is monopolized by a few wholesale dealers in most of the markets and the rest of the shopkeepers are small traders, generally dependent for supplies on wholesale dealers;
- Due to high fluctuation in market rates, it is difficult to ascertain the actual price of a particular crude drug;
- The quality of crude drugs is not up to the mark as the material is stored in an unhygienic manner and is often infested with insects and fungus. The godowns where the drugs are stored are dark and dingy. This results in the deterioration of the crude drugs.
- The margin of profit is very large. The actual producer/cultivator does not get a reasonable price for the raw material.

Once the items are purchased it is impossible for the naked eye to distinguish good quality from poor quality. Storage at the factory premises is also haphazard.

## Recommendations

Recommendations relating to the three sub-chapters are presented below:

### I. Recommendations relating to 'Traditional and Folk Medicine'

The Department of AYUSH may consider setting up an institute on the lines of the Indian Institute for Foreign Trade (IIFT) for trade in medicinal plants having a division for tribal and folk medicine. The institute should offer postgraduate diplomas and MBA qualifications for students from multidisciplinary backgrounds with the objective of providing competencies required for managing trade, commerce and quality control of medicinal plants, including for export. The suggested group of students could include:

1. Medical graduates and post-graduates of Ayurveda, Unani and Siddha, medicine;
2. Graduates of: Pharmacy; Chemical engineering; food, flavour or oil technology related professional courses;
3. Post-graduates in agro-technology, pharmacognosy, botany, pharmacology, and industrial chemistry;
4. Graduates of Science or agriculture (B.Sc. with botany and/or chemistry as majors) with more than 5 years experience in the pharmaceutical industry.

The institute should be able to build capacity to conduct demand and supply analysis for medicinal plants based on international trends, forecast

market opportunities and manage supply for a variety of stakeholders.

The institute should build the competency to identify, supervise grading, packaging, labelling and certification of raw drugs; also to manage and supervise the import and export of medicinal plants by assisting customs authorities as well as agents. The management of trade of pre-processed drugs should also be taught from the angle of certification. The institute can also undertake consultancies on behalf of NMPB, industry or the state governments in due course.

In the sub-chapter on demand and supply of medicinal plants the need for creating a computerised database of all licensed products manufactured in the ASU sector has been made. The introduction of unique product codes for both classical and proprietary drugs has been suggested to be harmonised with the drug codes used by customs and at ports to be able to monitor imports and exports. Students can be trained to manage these functions and also to become equipped to deal with bar codes which should be made mandatory in due course.

In order to ensure that the all-important aspects of preserving biodiversity and undertaking commercial utilisation in a sustainable way receives attention, the Governing board of the Institute should operate with a Consortium of allied organisations like FRLHT and others that have domain knowledge of collection practices. Organisations concerned with sustainable development of medicinal plants should also be inducted on the Governing board so that sufficient emphasis is placed on sensitising students about the precariousness of the situation when it comes to plants that have been banned from being extracted or are on the verge of extinction. In this way competencies that are needed to manage the raw drugs sector professionally would be built and there would be a pool of managers available to support both the public and the private sector in quality control, enforcement of regulations, facilitate import and export and extend oversight to ancillary activities connected with the preparation of packaged and certified raw material.

Division for Tribal and Folk Medicine: The proposed institute should have a division for tribal and folk medicine and the survey of medicinal plant units run by CCRAS and CCRUM should be made the field units of this division. Funds should be earmarked for upgrading at least a few units so that they are capable of providing basic facilities for examining herbarium specimens, facilitating research, holding seminars and lectures, besides providing internet facilities, scanners and photocopiers for students.

The work of CCRAS and CCRUM should not stop with the publication of monographs and storage of survey data and herbarium sheets. These should be made accessible to students of botany and allied subjects who should be given access to the material that has been stored in survey units at 22 places in the country. University and college departments of Botany, Ethno-botany, Anthropology and institutes engaged in work on tribal people, should be encouraged to organize visits of college students to selected units. During the 12$^{th}$ plan, efforts could be made to upgrade at least five such units and to make them capable of imparting practical knowledge. Lectures should be arranged using modern forms of presentation and inviting speakers from related institutions concerned with local health traditions, ethnobotany and tribal affairs to work as part-time or guest faculty. Internships should be offered to students who wish to study the findings stored in the CCRAS herbarium with current availability and uses of the plants. Apart from Indian students, even foreign students can be given an opportunity to intern at the Councils' units after the facilities are upgraded and paying guest facilities are tied up locally.

## II. Recommendation relating to 'Raw Drug Trade'

In the 12$^{th}$ Plan, looking at the general conditions in the market, there would need to be a complete overhaul in the management of raw drugs because that is fundamental and critical to the quality of medicine and the country's credibility for using high quality ingredients. Although the suggestions made by the raw drug dealers are correct in their own place, simply upgrading one part of the supply chain will not yield much result. While registration of the traders should be undertaken, certain non-negotiable requirements should be made mandatory for industry to follow when they purchase drugs. In the ultimate analysis the supply chain itself would have to be examined link by link to introduce checks that can reduce spoilage in transit.

## III. Recommendations relating to 'Demand and Supply of Raw Drugs'

**All crude drugs need to be given unique identification (ID) codes:** It should be made mandatory for suppliers and manufacturers to label a particular raw material by its assigned codes. This would also ensure quality of raw materials supplied to physicians and industry.

**Adopt successful systems/processes of other countries:** There is a need to learn from countries like China, Thailand, Korea and Japan, who manage their raw material collection, drying, storage and packaging in ways that ensure that the raw material is free from microbial and fungal contamination when supplied to the end users. China exports quality assured raw material all over the world. NMPB should lead a delegation of professionals to study collection, sorting, storage and packaging centres in China, Thailand, Korea or Japan to view best practices. Following this, NMPB should support the establishment of model demonstration field units in collection centres in different regions, where medicinal plants are presently being traded. Best practices in post-harvesting technology for low temperature drying and storage of raw materials in well designed, moisture free godowns, including installation of processors for hygienic packaging should be introduced with the assistance of expert institutions that have the technical know-how and have been using such devices for grading, packaging and storing similar commodities. This experience can be used for preparing the outline of a DPR for the proposed Institute for Trade in Medicinal Plants also.

**Establishment of co-operatives to improve supply chain:** Collection, production and marketing co-operatives organized for dairy workers, spinners, handloom weavers, sugarcane growers and cottage industries have played a major role in economic upliftment of those groups. On similar lines Rural Cooperative Societies for medicinal plants should be set up where farmers can deliver cultivated medicinal plants. Such Rural Cooperative Societies should deliver the produce to cooperatives at the Taluka level, which can be transported to the District Cooperative Societies. The District Cooperative Societies should be guided and trained to clean and grade the raw materials collected. Graded material should be sent to the main depots by road or train. Each centre should have access to a notified laboratory to conduct tests before accepting the raw material. The raw material should be sold to manufacturers along with the test reports.

**Regulation and monitoring of plant-based products:** With the long term aim of improving regulation of quality products the Department of AYUSH may commission reputed IT agencies to develop a computerized master database of all approved, licensed products manufactured in the AYUSH sector. This database needs to be prepared with unique product codes, for both classical and proprietary drugs. The codes should have provision for recording manufacturing sites, dosage form, licensed approvals. These codes should be harmonized with the drug codes used by customs and at ports so that they can also be used for monitoring exports. All manufacturers should be required to adopt the unique product codes for licensed products.

**Bar coding:** In due course this database can be used for linking manufactured products to bar codes which should be made mandatory. This approach should however not prevent licensed physicians from manufacturing and dispensing their own home pharmacy products to their patients which is perfectly legal.

**Use of pre-certified crude drugs:** There are thousands of licensed and a similar number of unlicensed manufacturing units which are operating despite cancellation of GMP. The large number of manufacturing units can be attributed to comparatively low infrastructure costs, non-enforcement of Pharmacopoeial standards and absence of standardization. All licensed manufacturers should be GMP compliant and should procure raw drugs only from certified co-operatives or dealers which should be made a legal requirement.

### Need to establish a Federation to support collection/ transportation and grading of medicinal plants

Presently the State Medicinal Plants Boards do not appear to have the wherewithal to coordinate this work. It would be better to initially outsource this work to established organisations like the

Horticulture Board, Spices Board or to any organisations that has set up a supply chain. In the long term NMPB should set up a Federation which can organise this work.

The Federation can have representations from the following agencies:-

- Department of Forests: For overall development & conservation of the biodiversity.
- State Electricity Board: To provide need-based power supply to the processing units. The unit(s) should be able to avail duty free diesel for power generation as per EXIM policy.
- State Medicinal Plants Board: For coordination with schemes for cultivation funded by NMPB.
- Minor Forest Produce Federation Limited: For collection and trading of non-wood forest produce.
- Forest Development Corporation: For Economic plantation and harvesting in forests.
- Industrial Development Corporation and Agricultural Marketing Boards: For financial and infrastructural support.
- State Agriculture Universities and Colleges: For research and development and training students.
- CG-CERT: For organic certification of medicinal plants, agriculture and processed items.

The organisational structure could be as follows:

National level Federation
(Planning, Oversight and Monitoring)
The Indian Institute of Packaging (IIP), Mumbai and the Agricultural and Processed Food Products Export Development Authority (APFPEDA) should be permanent numbers of the Federation

⇧

Regional or State level Federation
(Marketing arrangement and quality testing centre)

⇧

District level Centre
(Equipped with ware house /cold storage facility (APMC module)
(Establish linkage with other similar rural oriented development societies like National tree grower co-operative federation, Society for Promotion of Waste Land Development, NGO's like FRLHT etc.)

⇧

Collection Centre at Taluka level

⇧

Rural Cooperative Societies (RCS)
(Membership of farmers, medicinal plant collectors, cultivators, local Vaidyas.)

## General Recommendation

Unless the approach for collection, grading and storage of raw material is handled professionally India will lose the opportunity to sell high quality products or to export raw drugs in a planned and sustainable manner. Therefore this needs to be given high priority in the 12$^{th}$ Five Year Plan but it is important to leverage the strength of existing organisations already having expertise in aspects like collection, grading/storage, packaging and certification, instead of waiting until NMPB is able to upgrade itself incrementally. An inter-agency group needs to draw up a road map and NMPB should outsource these activities once they are defined.

# Annexure-I

## Details of Meeting held on 15th December 2010 with Raw Drug Dealers of Khari Baoli

The Principal Investigator was accompanied by:

1. Dr. Ashok B.K (Research Assistant IPGT and RA, Gujarat Ayurved University, Jamnagar, Gujarat).
2. Shri Chinmay Rath (Senior Research Fellow (Botany), CCRAS, New Delhi).
3. Dr. Rasikh Javaid, (Unani Consultant, New Delhi)

On the side of the traders, the following attended:-

| Sl.No. | Name of trader | Company |
|---|---|---|
| 1 | Anand Kumar Gupta | Uni Pharma India |
| 2 | Anand kumar | Anant overseas |
| 3 | Raj Kumar HarChand Rai | Hardwari Mal |
| 4 | Anil Kumar | Radhika Enterprises |
| 5 | Pramod Goel | Durga Prasad & co |
| 6 | Raj Kumar | Om trading Co |
| 7 | Rajiv Maheshwari Nathi | Ruggan Mal |
| 8 | Jitender Maheshwari Salig Ram | Maheshwari & Co |
| 9 | Saket Aggarwal | International Traders |
| 10 | Chetan Arora Satya | Tara & Co |
| 11 | Shyam Kapoor S. | Kapoor & Co |
| 12 | Satish Mehra | S.V. Marketing's |
| 13 | Aziz Bhai | Capital Traders |

# Annexure-II

## Questionnaire sent to Medicinal Plant Dealers supplying Raw Drugs to Industry

### उद्योगों को कच्ची औषधि की आपूर्ति में संलग्न औषधीय पौधों के डीलरों के लिए प्रश्नावली

### मुखपत्र

पत्र कवर में स्पष्ट किया गया है कि हस्ताक्षरित प्रधान अन्वेषक श्रीमती शैलजा चन्द्रा ने एक विवरण लिखना प्रारम्भ किया है जो कि सार्वजनिक हितों को ध्यान में रखते हुए भारतीय चिकित्सा प्रणाली (आयु., यूनानी तथा सिद्ध चिकित्सा) की वर्तमान स्थिति का वर्णन करेगी साथ ही उन प्रमुख कमियों को पहचानने में मदद करेगी जिन्हें भारत सरकार के आयुष विभाग द्वारा 2012 से 2017 वर्षावधि के लिए तैयार की गई 12वीं परियोजना में पूरा करने की आवश्यकता हैं।

प्रमुख अन्वेषक द्वारा वर्तमान दस्तावेजों का अध्ययन किया गया है तथा शिक्षा, अनुसंधान, व्यवसाय, औषधि निर्माण तथा विपणन के क्षेत्र में हितधारकों के साथ साक्षात्कार किया जा चुका है।

कच्ची दवा की उपलब्धता तथा गुणवत्ता को प्रदर्शित करने वाले प्रश्नों को सूचीबद्ध किया गया है कृपया उनका उत्तर दें। कृप्या यह ध्यान रखें कि इस विवरण का उद्देश्य जनता द्वारा औषधीय तथा चिकित्सीय प्रक्रिया से सम्बन्धित सकारात्मक विशेषताओं को प्रस्तुत करना, तथा उन महत्वपूर्ण क्षेत्रों का पता लगाना है जो कि सार्वजनिक ज्ञान, सामर्थ्य तथा कमियों की विस्तार से व्याख्या कर सकते हैं, जिससे की भविष्य में व्यापक जनता इससे लाभान्वित हो सके। कच्ची दवा की गुणवत्ता उससे बनी आर्युवेद, सिद्ध तथा युनानी औषधियों की गुणवत्ता को प्रभावित करती है, अतः इस क्षेत्र में सुधार अति आवश्यक है।

### मुद्दा

ASU उपयोगकर्ता में सभी अनुभागों द्वारा कच्ची औषधी की गुणवत्ता के खिलाफ आलोचना की गई है। यह कहा गया है कि सामान्यतः इन औषधियों की आपूर्ति वनों से एकत्र करके थोक में की जाती है, जो कि धूल तथा अशुद्धियों से भरी हुई होती है। इनकी गुणवत्ता का आश्वासन किसी भी स्तर पर नहीं दिया जा सकता कि उनके संग्रह तथा आपूर्ति में किसी प्रकार की मिलावट तथा प्रतिस्थापन नहीं किया गया है। ASU उत्पादों की गुणवत्ता तथा मानकीकरण पूर्णतया उसके स्रोत पौधों पर निर्भर करती हैं। उद्योगों, चिकित्सालयों तथा व्यक्तिगत औषधालयों द्वारा पौधों के स्वच्छतापूर्ण संग्रह, परिवहन, भंडारण तथा परिरक्षण की आवश्यकता पर जोर दिया गया है।

## उद्योगों को कच्ची औषधि की आपूर्ति में संलग्न औषधीय पौधों के डीलरों के लिए प्रश्नपत्र

1. कच्ची औषधियों की खरीद का स्रोत क्या है?

.......................................................................................................................................

2. आप कच्ची औषधियों का भंडारण कहाँ करते हैं?

.......................................................................................................................................

3. औषधियों के भंडारण की अवधि को जानने के लिए क्या कोई रजिस्टर बनाया गया है?

हाँ (1) ☐ नहीं (2) ☐

4. (क) कौन सा पौधा (1) ASU उद्योगों द्वारा उच्चतम माँग में हैं (2) खरीद में मुश्किल (3) विलुप्त प्रायः? 20–से 30 कच्चे औषधियों को उनके नाम तथा पौधों के उपयोगी हिस्सों द्वारा सूचीबद्ध करें?

| ASU उद्योगों द्वारा उच्चतम माँग में हैं | खरीद में मुश्किल | विलुप्त प्रायः |
|---|---|---|
| | | |
| | | |
| | | |

(ख) क्या यह संभव है कि कच्ची दवाओं की खरीद पर तब तक रोक लगा दि जायें जब तक की उनका स्रोत प्रमाणित न हो चाहे उन्हें देश के बाहर से मँगाया गया हो या देश में उत्पादित (उपजाया) किया गया हो?

.......................................................................................................................................

(ग) किस आधार पर ASU मण्डियाँ/सौदागर औषधियों की असलियत का निर्णय करते है?

.......................................................................................................................................

(घ) क्या औषधीय पौधों की सप्लाई करने वालों को ASU कि औषधियों में अधिकांशतयः उपयोग होने वाली 20–50 कच्ची औषधियों को प्रमाण पत्र देने कि जिम्मेंदारी दी जा सकती है?

हाँ (1) ☐ नहीं (2) ☐

5. (क) कृपया सुझाव दीजिये कि डीलर अपना उत्पाद उद्योगों को बेचने से पहले, उत्पादों की पहचान तथा प्रमाणिकता कहाँ से करवा सकते हैं?

.......................................................................................................................................

(ख) क्या ड्रग तथा कोस्मेटिक एक्ट, 1940 में कोई नियम सम्मिलित किया जा सकता है जिससे कि निर्माता केवल प्रमाणित उत्पाद ही खरीदें?

.......................................................................................................................................

(ग) पहचान तथा गुणवत्ता की परख की जिम्मेदारी किसकी है: आपूर्तिकर्ता, जिसने वनों के उत्पाद को खारी बावली को बेचा, या डीलर जिसने औषधीय पौधों को उद्योगों को बेचा? (किसी एक पर √ करें)

(अ) आपूर्तिकर्ता की जिम्मेदारी (1) ☐

(ख) डीलर की जिम्मेदारी (2) ☐

6. (अ) कृपया ASU औषधियों में प्रयोग होने वाले पौधों तथा पौधों के हिस्सों का प्रतिशत प्रकट करें जो आयात की जाती हैं।

..........................................................................................................................

(ख) औषधियों की आपूर्ति करने वाले देश कौन से हैं?

..........................................................................................................................

(ग) क्या सीमाशुल्क पर सामग्री की जाँच तथा पहचान करना सम्भव है?

हाँ (1) ☐ नहीं (2) ☐

(घ) यदि नहीं तो आयात की गई औषधि की गुणवत्ता को किस प्रकार प्रमाणित किया जा सकता है?

..........................................................................................................................

(ङ) क्या इस प्रकार की प्रमाणिकता आयातकर्ताओं के सम्मिलित प्रयास से की जा सकती है?

हाँ (1) ☐ नहीं (2) ☐

(च) यदि नहीं तो क्या इसे कानून द्वारा किया जा सकता है?

हाँ (1) ☐ नहीं (2) ☐

7. क्या उत्तर भारतीय निर्माताओं तथा दक्षिण भारतीय निर्माताओं के मध्य उच्चतम माँग वाले पौधों के बीच कोई क्षेत्रीय अन्तर है?

हाँ (1) ☐ नहीं (2) ☐

8. औषधीय पौधों से सम्बंधित मण्डियों को किस प्रकार आधुनिक तथा स्वचालित बनाया जा सकता है कि उनके द्वारा ASU निर्माताओं को औषधियाँ प्रमाण पत्र, पैक करने की तिथि तथा सर्वश्रेष्ठता की तिथि के साथ बेची जाये?

..........................................................................................................................

# Annexure III

## Letter of PI to CEO, National Medicinal Plants Board

Shailaja Chandra  Date: September 17, 2010
Principal Investigator
Former Secretary, Department of AYUSH
& Former Chief Secretary, Government of NCT, New Delhi

To,
The Chief Executive Officer,
National Medicinal Plants Board, New Delhi

**Subject:** Project on Status of Indian Medicine and Folk Healing in India

Dear Bala Prasad,

I was looking forward to receiving an analytical note from you by 3ist August according to our discussions when I had met you in your office. Just to recall our discussions, I had requested for:

1. Major tangible output of the NMPB in terms of improvement in supplies of raw drugs in demand State-wise.

2. With so many other agencies supporting the production of medicinal plants for export and drug formulation to what extent has the efforts of NMPB been able to register an impact? Does NMPB have a network with all agencies dealing with the development and export of medicinal plants?

3. It is learnt that NMPB is largely concerned with funding projects proposed by the State Medicinal Plant Boards. Does NMPB have an idea of the availability of high demand raw drugs required for formulation of ASU drugs by industry? How is this demand assessed? Is there a formal mechanism for consultation? Is there an Industry association that projects requirements to NMPB?

4. NMPB was stated to be extremely low on human resource. Is it feasible to use 50 botanists and Ayurveda /Unani experts (with training) to become a certification agency for raw drugs sold by the Mandis for medicinal purpose?

5. To what extent have the GAP requirements been fulfilled by growers of Medicinal plants supported by NMPB. How is incremental improvement being aimed for and with what success?

6. Give examples of at least 3 highly successful projects that have performed well with assistance from NMPB. Give reasons for success.

*. Mention main challenges in implementing the NMPB schemes.

7. Among all the players in the Medicinal Plant sector what is the role of NMPB? Is it recognized as a pivotal player or only as one among several players?

Kindly have the information sent at the earliest.

Regards,

Shailaja Chandra

**Dr Bala Prasad**
National Medicinal Plants Board, Department of AYUSH
Ministry of Health & Family Welfare, Government of India
Chandralok Building, 36, Janpath
New Delhi - 110001

# Annexure-IV

## Response of CEO NMPB to PI's Letter dated September 17, 2010

D.O.No. (C)-12/CEO/NMPB/2010
21st September, 2010

To,
The Principal Investigator,

**Subject:** Note in respect of National Medicinal Plants Board – reg.

Respected Madam,

Kindly recall our discussion and refer to your e-mail dated 17th September, 2010. Accordingly I have to provide point-wise information as follows:

1. Major tangible output of the NMPB in terms of improvement in supplies of raw drugs in demand State-wise.

   The compiled information on total plantation/cultivation under the major components of the NMPB Scheme under Resource augmentation, Contractual Farming and National Mission have been given in Annexure-I. The plantation status Statewise in different species have been given in Annexure-II. It is obvious from Annexure I that with the assistance of NMPB, 81658.98 ha area have been brought under medicinal plants cultivation/plantations till 31-3-2010. This has not only resulted in availability of good quality raw material to ASU industry, but also largely stablised prices of medicinal plants products. Besides, some key achievements of NMPB in this regard are as follows:

   - Mainstreaming of medicinal plants in forest departments. Guggul in Kutch; Dashmool in Valsad, Nasik, Orissa are a few examples.
   - Cultivation of species like Senna in Rajasthan; Atish and Kuth in Uttarakhand are some of the highlights.
   - Cultivation of Jatamanshi, Kuitki, Chirata by Sikkim Forest Department (FD) in high altitudes of Nathula through JFM.
   - First time plantation on extensive scale of Asoca by Orissa FD. They never did it in the past though Asoca naturally used to occur in the forests of Orissa.
   - Gradual but definite recognition of the need to share raw material data with Government. Earlier there was complete opacity and non-cooperation (thanks to the notification issued by Government due to NMPB's intervention).
   - School herbal garden a big success.
   - Amla campaign.

2. With so many other agencies supporting the production of medicinal plants for export and drug formulation to what extent has the efforts of NMPB been able to register an impact ? Does NMPB have a network with all agencies dealing with the development and export of medicinal plants?

   Though it appears that many agencies are involved in supporting the production of medicinal plants for exports and drugs formulations, they have very little and scaltered contribution in these fields, if it is seen in terms of the totality of impact. Over a period of time NMPB have developed networking with these organizations as well as many other scientific organizations, State Forest Departments etc. The position of the NMPB has emerged as main agency, which is duly appreciated by these agencies. NMPB has been able to give a boost to this sector in terms of making quality

raw-material available at reasonable price to the ASU industry and creating awareness about the importance of the sector as well as the conservation of the medicinal plants.

3. It is learnt that NMPB is largely concerned with funding projects proposed by the State Medicinal Plant Boards. Does NMPB have an idea of the availability of high demand raw drugs required for formulation of ASU drugs by industry? How is this demand assessed? Is there a formal mechanism for consultation? Is there an Industry association that projects requirements to NMPB?

   NMPB gives preference to the project proposals, submitted by or through SMPBs, the projects being implemented under the schemes by NMPB have much wider catchment area. The National Mission on Medicinal Plants scheme is being implemented through State Horticulture Missions. The resource augmentation of RET species are being successfully implemented through the State Forest Departments of Gujarat, Rajasthan, Madhya Pradesh, Orissa etc. NMPB has been able to conduct a comprehensive study on demand and supply of medicinal plants in India in 2007. This study has highlighted the fact that although the data from the published records in Ayurveda, Siddha, Unani, Sowa-rigpa, Homoeopathy and Ethno-botanical literature estimates the total number of species used in Indian System of Medicine at around 6000, only 960 of these have been recorded in trade. A significant suggestion of this report is that in the next few years the priorities for conservation efforts and cultivation should be sharply focused on 178 of these 960 species, which are traded in high volumes in quantities exceeding 100 MT per year. The study had duly covered ASU industries. NMPB is also preparing for another comprehensive study of demand and supply. While sanctioning the project particularly on cultivation/plantation, the demand and supply condition of the species are kept in reference. ASU Industries Association are always in touch with NMPB with formal and informal consultations.

4. NMPB was stated to be extremely low on human resource. Is it feasible to use 50 botanists and Ayurveda/Unani experts (with training) to become a certification agency for raw drugs sold by the Mandis for medicinal purpose?

   The matter needs to be considered in context of existing legal provision particularly with reference to Pharmacopoeias of Ayurveda and Unani where the legal power is vested with the drugs inspectors and PLIM/HPL. Further, it is important to ensure that good quality raw-material is used by ASU industries. In this context NMPB may play an active role in this field. The legal position needs to be broadbased and practical. Developing NMPB as Certifying Agency is an excellent idea . NMPB has already roped in Quality Council of India to develop standards.

5. To what extent have the GAP requirements been fulfilled by growers of Medicinal plants supported by NMPB. How is incremental improvement being aimed for and with what success?

   Though Good Agricultural Practices (GAPs) have been notified by NMPB, sincere efforts needs to be made for its comprehensive compliance. We need to make State Missions more active on the GAPs of medicinal plants and organize training workshops for the farmers and certification agency in this field. Further, there is need to develop GAP for each important species. Board will take up this aspect of GAP soon.

6. Give examples of at least 3 highly successful projects that have performed well with assistance from NMPB. Give reasons for success.

   Isabgol project in Rajasthan, Guggul in Gujarat and Asoca in Orissa.

   - Isabgol has huge domestic and international demand and climate of Rajasthan is very suitable for its cultivation.
   - India has been importing large quantity of guggal. Through research, propagation technique of Guggal could be successfully developed. Forest Department, Guajarat and Rajasthan are efficient implementing agency.

- Ashoka bark is in huge demand and it is naturally found in Orissa Forest. Forest Department could take up successful plantations of Ashoka.

In all above projects pro-active role played by NMPB was one of the reason for success.

7. Among all the players in the Medicinal Plant Sector what is the role of NMPB? Is it recognized as a pivotal player or only as one among several players?

   Gradually the role of NMPB as a pivotal player is being appreciated. Though there are many players in this field but they have their own limitations whereas the NMPB is fully focussed on medicinal plants sector. It is contributing substantially for growth of the sector. The constitution of NMPB is being appreciated by almost all groups of stakeholders.

With regards

Yours sincerely,

(BALA PRASAD)

Ms. Shailaja Chandra
Chairman, Delhi Public Library &
PI (Project on Status of Indian Medicine and Folk Healing),
H-Block, Sarojini Nagar,
New Delhi-23.

Encl.:As above.

State-wise Area Covered Under Various Medicinal Plant Species Under Centally Sponsored Scheme of National Mission on Medicinal Plants During 2008-09

(Area in ha)

| S.No. | State | Name of the Species | Area Coverd (ha) |
|---|---|---|---|
| 1. | Assam | | |
| | | Ocimum sanctum ( Tulsi) | 50 |
| | | Piper longum (Pippali) | 30 |
| | | Swertia chirata (Chirata) | 20.5 |
| | | Saraca asoca (Ashok) | 20 |
| | | Aegle marmelos (Bael) | 20 |
| | | Rauwolfia serpentina (Sarpagandha) | 20 |
| | | Emblica officianlis(Amla ) | 20 |
| | | Withania somenifera (Ashwagandha) | 20 |
| | | Tinospora cordfolia (Giloe) | 20 |
| | | **Sub Total** | **220.5** |
| 2. | Bihar | | |
| | | Aloe Vera (Ghrit kumari) | 1 |
| | | Emblica officianlis(Amla ) | 0 |
| | | Ocimum sanctum ( Tulsi) | 20 |
| | | Andrographis paniculata (Kalmegh) | 40 |
| | | Stevia rebaudiana ( Stevia) | 0 |
| | | Asparagus racemosus (Shatavar) | 20 |
| | | Chlorophytum borivillianum (Shwet musli) | 16 |
| | | Madhukari | 2 |
| | | Withania somenifera (Ashwagandha) | 4 |
| | | Acorus calamus (Bach) | 2 |
| | | **Sub Total** | **105** |
| 3. | Karnataka | | |
| | | Withania somnifera (Ashwagandha) | 1491.0 |
| | | Ocimum sanctam (Tulsi) | 250.9 |
| | | Sanatalum album (Chandan) | 227.7 |
| | | Emblica officinalis (Amla) | 270.2 |
| | | Coleus barbatus (Patharchur) | 111.0 |
| | | Garcinia indica (Kokum) | 22.4 |
| | | Acorus calamus (Bach) | 1.2 |
| | | Andrographis paniculata (Kalmegh) | 0.0 |
| | | Asparagus racemosus (Shatavar) | 0.0 |
| | | Stevia rebaudiana (Stevia) | 13.4 |
| | | Gloriosa superba (kalihari) | 14.9 |
| | | Aegle marmelos (Bael) | 5.0 |
| | | Cinnamomum zeylanicum ( Dalchini) | 2.8 |

(Area in ha)

| S.No. | State | Name of the Species | Area Coverd (ha) |
|---|---|---|---|
| | | Aloe Vera (Ghrit kumari) | 2.6 |
| | | Azadirachta indica (Neem) | 2.2 |
| | | Bacopa monnieri (Brahmi) | 2.0 |
| | | Ghambhari | 0.8 |
| | | **Sub Total** | **2418** |
| 4. | Kerala | | |
| | | Emblica officinalis (Amla) | 50 |
| | | Saraca asoca (Ashok) | 50 |
| | | Aloe Vera (Ghrit kumari) | 30 |
| | | Piper longum (Pippali) | 15 |
| | | Rauwolfia serpentina (Sarpagandha) | 25 |
| | | Bacopa monnieri (Brahmi) | 30 |
| | | Ocimum sanctum ( Tulsi) | |
| | | Asparagus raecemosus (Satavari) | 25 |
| | | Convolvulus vettiveroides (Shankpushpi) | 30 |
| | | Sanatalum album (Chandan) | 30.2 |
| | | **Sub Total** | **285.2** |
| 5. | Maharashtra | | |
| | | Chlorophytum borivillianum (Shwet musli) | 310.04 |
| | | Cassia angustifolia (Sena) | 0 |
| | | Andrographais paniculata (Kalmegh) | 0 |
| | | Withania somenifera (Ashwagandha) | 0.2 |
| | | Asparagus racemosus (Shatavar) | 0 |
| | | Piper longum (Pippali) | 78.71 |
| | | Stevia rebaudiana ( Stevia) | 22.15 |
| | | Ocimum sanctum ( Tulsi) | 0 |
| | | Phyllanthus amarus (Bhumi amlaki) | 0 |
| | | Macuna prurita (Konch) | 0 |
| | | Bacopa monnieri (Brahmi) | 0 |
| | | Gymnema Sylvestirs (Gudmer) | 0 |
| | | Terminalia arjuna (Arjun) | 0 |
| | | Saraca asoca (Ashok) | 0 |
| | | Terminalia bellerica (Bahera) | 0 |
| | | Terminalia chebula (Harad) | 0 |
| | | Aegle marmelos (Bael) | 0 |
| | | Embelia ribes (Vai Vadang) | 0 |
| | | coleus | 2.48 |
| | | **Sub Total** | **413.58** |

(Area in ha)

| S.No. | State | Name of the Species | Area Coverd (ha) |
|---|---|---|---|
| 6. | Manipur | | |
| | | Aloe Vera (Ghrit kumari) | 50 |
| | | Stevia rebaudiana ( Stevia) | 50 |
| | | **Sub Total** | **100** |
| 7. | Mizoram | | |
| | | Emblica officianlis(Amla ) | 66 |
| | | Cinnamomum verum | 16 |
| | | **Sub Total** | **82** |
| 8. | Nagaland | | |
| | | Aquilaria agallocha (Agar) | 165 |
| | | Swertia chirata (Chirata) | |
| | | **Sub Total** | **165** |
| 9. | Tamil Nadu | | |
| | | Cassia angustifolia (Sena) | 1623.16 |
| | | Gloriosa superba (Kalihari) | 514.69 |
| | | Catharanthus roseus (Sadabahar) | 28.95 |
| | | Emblica officinalis (Amla) | 200.34 |
| | | Azadirachta indica (Neem) | 98.33 |
| | | Solanum nigrum (Makoy) | 25.12 |
| | | Coleus (Patharchur) | 1039.82 |
| | | Aloe Vera (Ghrit kumari) | 28.65 |
| | | Cymbopogan flexuosus (lemnongrass) | 0 |
| | | Mentha piperita (Mentha) | 0 |
| | | Acorus calamus (Bach) | 82.12 |
| | | Ocimum sanctum ( Tulsi) | 77.01 |
| | | Sida cordifolia | 55.96 |
| | | Gymnema Sylvestirs (Gudmer) | 0 |
| | | Withania somenifera (Ashwagandha) | 0 |
| | | Aegle marmelos (Bael) | 0 |
| | | Piper longum (Pippali) | 39.48 |
| | | Phyllanthus amarus (Bhumi amlaki) | 1 |
| | | Macuna prurita (Konch) | 0 |
| | | Andrographais paniculata (Kalmegh) | 0 |
| | | Santalum album | 44.2 |
| | | Total | 11.03 |
| | | **Sub Total** | **3869.86** |
| | | **Total** | **7659.12** |

# 6

# Drugs

## Drugs


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# 6

# Quality Assurance of Drugs

## I. Manufacture of ASU Drugs and Quality Assurance

### History of ASU Drug Manufacture

It is important to go a little back in history and consider how the drug industry evolved. Up to the first half of the 19th century ready-made Ayurvedic and Unani medicines were never considered as commodities to be marketed for money. MS Hiralal in his article 'Commercializing traditional medicine'[1] has described how the production of medicine was concentrated in and around the physician who worked within a given locality and offered his services to the public.

In the mid-19th century the response of the community of Vaidyas and Hakims to the spread of epidemics was the first movement towards shifting household production to bulk production of drugs. However, the real initiative into large scale production started in Bengal and in Kerala. The evidence shows that Ayurveda, Unani practitioners formed associations of Hakims and Vaidyas. Recognizing the negative attitudes of colonial powers towards them and after their efforts to be recognised as physicians with state backing failed, then a new way of establishing hegemony had to be found. The market was a promising option.

The late 19th century saw Bombay (Shree Dhootpapeshwar, 1888), Kottakal (Arya Vaidya Sala, 1901), Coimbatore (Arya Vaidya Pharmacy, 1902) and Calcutta (Kalapataru Ayurvedic Works, 1884) as the pioneers that transformed Ayurveda into a new world of large scale production. While using mechanized production systems, the traditional procedures for making the medicines were preserved. Thereby the six main forms, in which Ayurvedic medicines were made - Bhasmas, Churnas, Lehas, Arishtas, Asavas and tablets - were retained, but modern machinery enabled bulk production and modern dosage forms.[2]

### Regulation

Today modern factories manufacturing Ayurvedic medicines are completely mechanized. The industrial scene has been described as having an "oligopolistic structure" with a few big firms dominating the market. Nonetheless thousands of small firms also operate which have small production capacity but enjoy a wider social base. After Independence and particularly after the 1970s a host of new formulations called Patent and Proprietary (P&P) products came into the market, running in parallel to the marketing of classical products. Branding and advertising became the new way of promoting Ayurvedic products, which introduced a spirit of commerce for the first time.

By the later part of the last century branded products increasingly replaced classical medicine. Practicing Ayurvedic physicians, particularly those running large clinics and hospitals preferred to buy medicines from professional manufacturers. Pharmaceutical companies also started using agents to talk to chemists and stockists of Ayurvedic and Unani medicines much as is done in the case of allopathic drugs. Marteen Bode[3] has referred to the phenomenon as the, commoditization of Ayurvedic and Unani medicine which according to him *"eroded the position of the traditional physician, abandoning and ignoring the efficacy*

1. Hiralal, MS. "Ayurvedic Manufacturing in Kerala." *Economic and Political Weekly,* April 18, 2009, Vol. XLIV, No.16.
2. Banerjee, Madhulika. *Power, Knowledge, Medicine: Ayurvedic Pharmaceuticals at Home and in the World.* Hyderabad: Orient Blackswan, 2009.
3. Bode, Maarten. *Taking Traditional Knowledge to the Market: The Modern Image of the Ayurvedic and Unani Industry, 1980-2000.* Hyderabad: Orient Longman, 2008.

*of humoral diagnostic methods and therapies."* While that is correct, once manufacturing took root, the medicines were no longer hand-made and hand-distributed. The dynamics of the market and the introduction of state regulation required laboratory testing and employment of scientific methods for identification and formulation of drugs. To protect consumer safety, quality became fundamental. Regulating the manufacture and sale of ASU medicines was no longer an option but a necessity.

## Current Status of ASU Drug Manufacture and Quality Control

The ensuing report is based on interaction among others with the Drug Controller General (India) discussions with the Director and professional staff of the Pharmaceutical Laboratory for Indian Medicine (PLIM), the FDA officials of Maharashtra, Gujarat, Delhi and Kerala. Among others, members of the Ayurvedic Drug Manufacturers' Association (ADMA), and several pharmacy experts as well as the heads of ASU manufacturing units in the Government and private sector were also consulted. The Chapter focuses on the existing legal set-up and the measures that can be introduced to overcome concerns about raw material quality, standardization issues, metallic content of ASU drugs, and the present absence of uniformity in providing oversight within and across the States.

### Legal Status of ASU Drug Manufacture

The Drugs and Cosmetics Act (DCAR), 1940 was amended in 1964 and Chapter-IV A was introduced with regulations defining the manufacture and sale of ASU products. The Rules and Regulations have undergone numerous revisions with the aim of protecting the consumer and keeping abreast with technological advancement and innovation.

Regulations were put in place to ensure safety and quality of ASU products but the basic model was derived from the Food, Pharmaceutical or Cosmetic industry. Ensuring the use of the right medicinal plants of proper quality became a mandatory requirement; to achieve that the formularies and pharmacopoeias were declared as legal benchmarks for determining the quality of the ingredients and the processing methodology used in ASU drugs manufacture.

Good Manufacturing Practice (GMP) for ASU drugs was introduced in the DCAR under Schedule T and under Schedule T-1 for Rasaushadhis (metal based preparations). GMP was first notified in June 2000 when it became a mandatory requirement for new ASU drug manufacturing units. For existing units a two-year grace period was given to obtain GMP certification. But notifying a standard was not enough. Its adoption by manufacturers required constant monitoring, an aspect that obviously did not receive much attention in the States that were responsible for enforcement under the law.

Today the ground situation is undulating. In the interest of consumer protection it is better to have a realistic view of what is possible and what affects public safety the most. Quality of raw material is critical for producing high-quality medicine. Unless the ingredients are authentic and the processes follow the mandatory measures prescribed, the products can prove to be ineffective. The quality of ASU medicines is being questioned across the country and mostly by potential users who feel unsure of the contents and safety of the products although they would like to try the traditional systems for a variety of reasons.

### Marketing of ASU Drugs

The products are marketed in the following ways:

1. Classical Ayurvedic/Unani products sold through Vaidyas and Hakims and also purchased by consumers from shops selling ASU medicines. These are often sold with rudimentary packing and labeling or packaged as capsules and tablets in blister packs, along with syrups and oils. These are also sold through clinics and franchises of manufacturers.

2. Proprietary ASU medicines which are branded and sold through ASU retail outlets or through licensed chemist shops and groceries. For such products sales are promoted through advertisements and through pharmaceutical agents engaged by manufacturers. These proprietary medicines are prescribed by ASU practitioners and sometimes even by modern doctors (A large number of ASU products now have modern sounding names). (See page 251.)

3. Proprietary or classical preparations using one or more metals including heavy metals (Rasa preparations, Bhasmas, etc.) prescribed by practitioners and supposed to be taken under their supervision. These products are freely available in "Desi Dawai" outlets and sold across the counter by ASU shopkeepers. (No pharmacists or ASU practitioners are generally present).
4. Proprietary ASU toileteries and cosmetics which are marketed as medicine. These products are primarily for the skin, hair or dental care. They do not have serious drug like activity, although they do have medicinal properties.
5. Though very small in value and volume some Ayurvedic products are also sold through therapy centers and spas as well as beauty salons.

The Department of AYUSH (DoA) has issued a Gazette Notification in 2010 introducing a new Category under 3(h) of DCAR, as "Soundaryavardhak" – which refers to cosmetics.

## Formulation of ASU Drugs

The Ayurvedic Formulary of India (AFI), Part I, First edition was published in the year 1978 and was the first official document of its kind on Ayurvedic medicine. This document enjoined the manufactures to follow the prescription and processes laid out. By introducing it in the First Schedule of the Drugs and Cosmetics Act, 1940 it gave legal status to the compendium. Since then AFI Part II has been published together covering 635 formulations in all.

## Implementation of Regulatory Requirements

In the last decade a slew of measures have been taken to provide a legal and qualitative framework for making quality products available to the consumer. However, in practice the manner in which the Rules are enforced leaves a lot to be desired. During interactions with at least seven licensing authorities from the States having large number of manufacturing units, it was apparent that the concerned officers do not possess the wherewithal (technically qualified human resources) to ensure that the manufacturing units fulfill their obligations. Approval is granted on the basis of claims made by the manufacturer. A very large number of items are approved for manufacture at a time when manufacture has not commenced. After it commences, there is very little done by way of inspections, sampling and independent authentication of raw material used by the manufacturer.

There is a vast difference between the top players and the standards they adhere to at times above the expectations of GMP and those followed by the small manufacturers particularly those who are making a handful of items. The licensing authorities seem to lack the authority or willingness to refuse grant of license or suspend or cancel the licenses when it is apparent that the raw material has not been stored properly or the process specified in the pharmacopoeias has not been followed.

In terms of the range of items, many of the small and tiny producers are like cottage industries. The approach of the Government schemes has been to try and bring all players under the GMP umbrella through persuasion and financial support. But that is not motivating those that are way below the benchmark because there is in their view no advantage from getting GMP and no disadvantage either as there is no penalty attached.

Enforcement is notoriously weak and attributed to shortage of manpower. If the rules, regulations and pharmacopoeial standards are to be enforced it would be necessary to have a high degree of surveillance not just over GMP but over the quality of raw drugs and processes used. Many of the inspectors who work in the ASU sector are often people who have had no exposure to how botanical identification is done; it is vitally important that that capacity is developed and the possibility of sub-standard raw drugs entering the manufacturing process is minimized. The state-wise variation and high percentage of GMP non-compliant manufacturers is a cause for serious concern

## Status of GMP Compliance

A little good news is that things appear to have improved over two years. Whereas the total percentage of ASU GMP compliant units in India was 53% in 2008 (http://indianmedicine.nic.in/writereaddata/linkimages/0203216722-Section-5.pdf) it is now reported to have increased to 62% in 2010 (http://indianmedicine.nic.in/writereaddata/linkimages/8789837245-Licenced%20Pharmacies%20Part-II.pdf).

Almost all states have shown an improvement in the percentage of GMP units from 2008 to 2010.

Gujarat however showed 100% GMP compliance in 2008 which has inexplicably plummeted to 16% GMP compliance in 2 years.The chart below captures the differences and calls for much more stringent monitoring. The mechanical approach to data collection at the state level challenges its veracity.

### Manufacturing units showing more than 50% non-compliance of GMP

Manufacturers of the following states are apparently not following GMP to a very large extent. Those with more than 50% non-compliance are Madhya Pradesh (91%), Gujarat (84%), Tamil Nadu (78%), Assam (64%), Maharashtra (59%), Bihar (58%) and Uttarakhand (57%).

## Priority to Consumer Safety

Looking at this picture, it is difficult to say whether the sector is ever going to improve as nine years have elapsed since the GMP requirement became mandatory. On the one hand if certain states can achieve cent percent GMP compliance, it is not an unattainable standard. On the other hand if almost half the units are refusing to become GMP compliant which is a mandatory legal requirement, and they continue to operate in violation of the law, shelter cannot be taken for all times on the grounds that they cannot afford to meet GMP requirements.

## Factory-based Manufacture vs. Traditional Manufacture

In the ASU sector, thousands of units fall in the small and tiny category and they are nothing more than cottage units making hardly a score of items being supplied to limited outlets. These people have limited financial resources and they are unlikely to

Requirement for factory based manufacture

ever upgrade their manufacturing processes, or undertake stage by stage testing in the foreseeable future.

## QCI Marking

The PI was told by members of the Drug Manufacturers, Association that the Quality Control of India (QCI) mark strategy is meeting with apathy as the costs are prohibitive and the mark is being offered for individual items and not for the manufacturer's unit as a whole. As such very few manufacturers seem to aspire for QCI certification which will hold back a well-intentioned scheme.

## Products Containing Metals and Minerals

The mineral and metallic content of ASU drugs has been highlighted in the press from time to time. The Department of AYUSH issued a press note on 2$^{nd}$ September 2005 notifying mandatory testing of heavy metals for Ayurveda, Siddha and Unani being exported from India w.e.f. 1.1.2006. Furthermore, toxicological testing of eight Rasa Aushadhis (Herbo-metallic formulations) was carried out at CSIR laboratories by selecting a reputed manufacturer to supply the products which were taken up for physico-chemical characterization and toxicity studies. On the basis of 28 days toxicity studies, all the eight Rasa Aushadhis were found to be non-toxic. But this is by no means a universal or permanent indication of absence of toxicity.

## Heavy Metals in Medicinal Plants

Samples of 600 Indian medicinal plants collected from the wild as well as different medicinal plant gardens in India were sent to a cross-section of CSIR and other reputed laboratories which reported that lead, mercury and arsenic were not been found above the permissible limits laid down by WHO (10 ppm for lead, 1ppm for mercury and 3 ppm for arsenic). This study seems to show that Indian medicinal plants collected from the wild or cultivated sources, were been found to be free from lead, mercury and arsenic contamination. However adverse reports continue to be published in India and abroad.

Herbo-metallic compound formulations are not being exported. But even for the Indian market a check on herbo-mineral and metallic products must be mounted continuously and the outcomes publicised regularly to allay misgivings.

## Supplementary Guidelines

The Department of AYUSH published "Supplementary guidelines for manufacturing Rasaushadhis or Rasamarunthukal and Kushtajat (Herbo-mineral-metallic compounds) of Ayurveda, Siddha and Unani medicines in March, 2009.

This is a welcome step but it is necessary to publicize such measures in the lay press as very few people are aware of the measures initiated to protect consumer safety. The public is unaware about these measures.

## The Risk to the Consumer

Products made by some units whose GMP has been cancelled are reportedly still sold in the open market. Obviously the state licensing authorities are not in a position to ensure that such products do not come into retail sale. Drug inspectors expressed helplessness due to shortage of staff and time.

To be realistic, it appears difficult to expect total compliance because a large number of units have nothing to gain or lose by not getting GMP. As long as the products sell and there is a captive clientele, manufacturers know that the punishment which is prescribed in the law will not be enforced. Even if the Central government provides the manpower to run the State Drug Testing Laboratories (a scheme that was referred to as being under consideration), unless there is a willingness to enforce the law on the part of State governments, quality control may take years to become a reality.

The present system of stacking raw drugs outside the manufacturing area is quite haphazard at places. Washing and drying is hardly being done before powdering many raw drugs. As a result chances of impurities and contaminants lingering in the powders remain.

The consumer should not be exposed to buy medicinal products which do not meet the prescribed standards. The Principal Investigator discussed this matter with a wide cross-section of experts. It was felt that the time has come to look at the issue from the consumers' end. Prolonged and indiscriminate use of products for enhancing sexual potency were reported to be rampant. Industry associations would like to see every manufacturer becoming GMP compliant because that give credibility to the entire industry. Further the benefit of sales should legitimately accrue to those who follow the law and not to those who disregard it. Hence they push for GMP but the manufactures who do not have GMP are least bothered.

## Differentiating Between "Manufacture" and "Preparation" of ASU Drugs

There is a need to look at the picture differently. The law permits the Vaidya/ Hakim/ Siddha to manufacture his own medicine using the ingredients in the classical texts but according to his own genius. As long as the medicines are formulated for the use of his patients and administered by him, he is not expected to follow GMP. Therefore smaller manufacturers that are supplying the Vaidyas and who process or repack or blend bulk raw drugs cannot be called "manufacturer". This category needs to be defined afresh. It is also debatable whether such suppliers who are following the traditional way of making ASU drugs should be closed down for want of GMP.

On inspection if such units do not come under the category of "manufacture" they should not be allowed to enter their products in the normal trade channel distribution/C&F agents/retail outlets, etc. But in all fairness they should be permitted to continue to supply practitioners employed by them or practicing independently.

It is time to introduce a system where household and tiny units are not permitted to sell products in the distributive system; but they should be allowed to supply relatively small quantities to practitioners.

Stacking of Raw Drugs just outside production area of a factory

View of the Dhanwantari Pharmacy manufacturing Ayurvedic drugs and metallic products

View of furnace and preparation of Bhasma at Dhanwantari Pharmacy

Preparation of Rasausadhis and other formulations

IPD at Dhanwantari Pharmacy

Some Ayurvedic outlets like the Dhanwantri Ayurvedic sale outlet in Jaipur shown in the pictures above follow age-old traditional methods of making drugs including preparations containing metals and minerals. The pharmacy is dispensing those drugs in an OPD and a ten-bed hospital running inside the premises. The only difference is that today the Dhanwantri Ayurvedic shop which operates from the main Jaipur market, can sell all its products to anyone from the public. If the suggestion being made by the PI is accepted, the shop would not be allowed to sell the products in retail but could continue to administer the drugs to the outpatients and in-patients and to also supply the same to other practitioners. This is covered by the existing law. Only an embargo on retail sale of such ASU products should be in place and practitioners made responsible for the drugs they provide.

## Need to Uphold Traditional Production of ASU Drugs Used by Practitioners

A separate set of provisions regulating such small producers of ASU medicines need to be introduced

and guidelines issued so that requirements of hygiene are observed. It would be a retrograde step to close such units down. They represent the last vestiges of traditional preparation of drugs. Just like the country invests so much to preserve its heritage including the skills of its weavers, artisans and their arts and crafts, this too represents a part of tradition which should not be shut down with the single aim of ensuring that only those who have GMP are allowed to make ASU medicine.

A new licensing category defining such firms as either "Traditional processer license/ or ASU "Bheshaja Kalpana license" need to be added under the DCA Rules. Alongside clear regulatory provisions should also be introduced to protect the consumer:-

i) Such products made by the traditional processors should be limited for supply to practitioners (Vaidyas, Siddhars and Hakims) and the subsequent responsibility for prescribing this medicine or selling it to individual patients would be of the practitioner. At all times the linkage with a practising Vaidya would need to be established by any traditional processor.

ii) The practitioner would be responsible to ensure that such drug processors use quality raw material, undertake all processing in a hygienic manner and maintain records of the processing and sale of products to the practitioner.

iii) A specific provision should be made disallowing the issue of manufacturing licenses to such establishments. The produce of such units should be allowed for distribution to practitioners within the state because interstate commerce poses several problems. FDA Maharashtra Officers showed the PI samples of spurious drugs for sexual potency sold in Maharashtra and manufactured in Punjab. These small producers without GMP should not be permitted to sell their medicines in retail to Ayurvedic shops or to chemists and sale to ASU practitioners should be restricted to the State boundaries.

Excluding such units that supply only to practitioners, the remaining units which manufacture ASU products for distributive trade and interstate commerce need to be made fully GMP compliant. The current levels of GMP also need to be upgraded in keeping with international best practices.

## Registration of ASU Sale Outlets

Side by side all retail outlets stocking/selling ASU medicines should be asked to get registration for sale of ASU drugs. This is in consumer interest because at present the shops are selling several formulations, classical and proprietary, purely plant-based or herbo-mineral as well as products containing metals. The simple claim that all processes given in the classical texts have been followed is insufficient for consumer protection.

Consumers purchase drugs and use them for extended periods which could be harmful. Loyalty to the system should not overlook consumer rights and safety. The Drug Controller of Kerala suggested that shop registration should be introduced at a nominal cost of Rs.2000 per year. The State has 25,000 sale outlets and it is not possible to oversee what each outlet is stocking and selling. The funds collected from annual registration could be put into a revolving pool, which could pay for fulfilling consumer related activities. An undertaking to stock and sell only GMP compliant companies' drugs should be obtained and should be checked through random visits.

## Pharmacopoeial Standards

### Present status of publication

The progress has been commendable.

- Ayurvedic Pharmacopoeia Part I with 540 single drugs has been published.
- Ayurvedic Pharmacopoeia Part II with 101 monographs on formulations has been published.
- The Unani and Siddha formularies contain 1091 and 248 formulations respectively. Source: http://indianmedicine.nic.in/writereaddata/linkimages/9084167477-apc%20web%20july%2010.pdf (accessed on 1.8.2011)
- The Unani pharmacopoeias contain 298 single drugs and 100 formulations. Source: http://www.ccrum.net/research/upc/ (accessed on 1.8.2011)
- The Siddha pharmacopoeia contains 73 single drugs. Source: http://crisiddha.tn.nic.in/committee.html (accessed on 1.8.2011)

The ASU pharmacopoeias (API, UPI, etc.) specify the morphology and microscopic tests for checking the botanical authenticity of plants used in the

manufacture of ASU drugs. The technology being used for confirming botanical identity has remained somewhat static. Meanwhile fears about substitution and adulteration of raw drugs are on the rise. Qualified and experienced botanists and taxonomists are not easily available as the career is not considered rewarding. The current trend of using pre-powdered plants further necessitates that identity testing and confirmation is done on powdered substrates also.

The Pharmacopoeia Committees have not opted for new technologies like "bar coding" based on an analysis of the specific portions of the DNA of the plants. During discussion with experts it was indicated that nowadays the identification process can be fine-tuned to cover even the powdered form. Some of these are indicated in the foot note.[4]

While a test TLC (Thin layer chromatography) profile which gives a specific and unique pattern of spots has been suggested this test is not mandatory for acceptance or rejection of a consignment.

## International Best Practices and Standards

According to experts consulted by the PI, the pharmacopoeial tests prescribed are insufficient and need to be upgraded. Far higher standards are demanded in international commerce. The Books of Standards (Pharmacopoeias) of countries like the United States, the U.K., Republic of China and Europe, all demand quantitative estimation of the chemical composition of the parts of plants/ whole plants and extracts.

## Indian and ASU Pharmacopoeia Commissions

The Indian Pharmacopoeia (IP) published by the Indian Pharmacopoeia Commission has 89 monographs relating to plants and plant extracts that meet this standard. If the plant sample under examination does not show the presence of prescribed percentages of the ingredients or does not meet the assay requirements, such samples simply fail. Keeping this in mind, it is time that the Ayurvedic Pharmacopoeia Commission of India (APCI) becomes functional so that the same rigor can be exercised in respect of Ayurvedic drugs.

It is understood that in the latest volume of the API (Volume 8) specifications have been developed on the lines of IP 2010/BP and USP. This is a welcome trend. Wherever the international standards are at par, Department of AYUSH also needs to initiate steps to have reciprocity/bilateral acceptance of the specifications laid down in various volumes of the pharmacopoeias and formularies.

## Incentives to Promote Use of Cultivated Raw Material

The subject of medicinal plants has been dealt with at length in a separate chapter of this report. In order to encourage industry to buy raw material from cultivated sources and also to provide an incentive to cultivators to diversify into medicinal plant cultivation the following proposals were made by industry. They deserve consideration because it would give an impetus to the production of quality products:-

- 150% Income Tax exemption on the purchase value of cultivated raw materials: In the pharmaceutical industry, in order to promote R&D, Government of India had reportedly introduced a provision of 150% Income Tax exemption on the amount spent on clinical trials as a part of R&D. A similar provision can be extended to AYUSH Industry which will automatically lead to an increase in the demand for high quality cultivated plant material.
- 100% exemption from CST (Central Sales Tax, 4%) may be given on purchase of herbal raw material from cultivated sources. Allowing MODVAT credit of 40% on the cost of purchase of cultivated raw material will work in two ways: Industry will be willing to buy the raw material at a higher cost because it will be able to claim it back by way of MODVAT. At the same time the cultivation of medicinal plants can become a sustainable business, coupled with ancillary

4. There are a number of parameters that can be used in the identification process such as starch grains and their structures, lignified parenchyma, cork and their structures, calcium oxalate crystals, stomata and differences in stomatal index, vessels and tracheids, stone cells, type and varieties of fibers pollen grains, which can be seen, even if the herbs are supplied in "powder form". Scientific studies using a microscope with image analysis tools, coupled with IT tools are available and this would be an easier and much more authentic test, if developed with a data base on the most commonly used ASU plants and their substitutes and adulterants. Source: Anantha Narayana DB, Guest Editor, Pharmacog Magzine, Vol.6 Issue 23, July-Sept. 2010, p.145-146)

schemes that promote grading, testing, certification, packaging and sale of raw drugs through district co-operatives.

## Systematizing Licensing of ASU Drugs

Currently licenses for manufactured ASU medicines whether classical or P&P preparations are granted by the State Licensing Authorities where the manufacturing units are situated. There is no standard format for application for the grant of these licenses leading to enormous variation in the information and data required to be attached to the application while seeking a license. The process followed for grant of licenses is also not uniform which leads to delays and unnecessary paper work.

Examination of the application is minimal while granting licenses for classical preparations since manufacturers are bound to adopt the formulation as given in the official texts recognized in first schedule of Drugs & Cosmetics Act and also adopt the process as given in those books.

Once the premises have been inspected and the capacity to make certain forms of medicine is accepted, it should suffice if the manufacturer notifies that he has started producing additional items in the same classical category. A letter informing the licensing authority about adding more items in the same type of category (Asava, Arishta, Ghrihta etc.) should be taken as adequate. Such premarket notification systems (as opposed to post-market licensing systems) are reported to be in vogue in other parts of the world including ASEAN countries. This step will reduce red tape, and improve efficiency while the Regulatory authorities would always have information on the number and type of classical medicines being produced by each manufacturer. This should be put on a website and updated constantly. Industry groups and competitors will be quick to point out deficiencies in case incorrect claims are made.

## Licensing of P&P Medicine

As regards P&P medicine licenses there is an urgent need to review the current system and to notify a standard format for application for additional product licenses. Along with such standard formats a uniform approval system should be laid down to bring efficiency and objectivity. An ASU Industry Association, ADMA had suggested that a "Dossier approach" should be adopted. The suggested dossier is given at **(Annexure-I)** which could be sent to the States for uniform adoption. It would prevent haphazard proliferation of license applications and make it incumbent on the licensing authority to take a view within a prescribed period.

Incomplete application forms need not even be accepted. The dossier would hold the manufacturer responsible for what he has claimed. The products would be licensed for the claims made and the insistence on product inserts would be in consumer interest.

## Quality Control Certification for Consumer Safety

At present QCI has been appointed to give quality certification and QCI in turn has identified and appointed third-party certifying agencies. The scheme does not seem to be attracting too many manufacturers because according to members of ADMA, the certification is not manufacturer-based but product-based which turns out to be extremely costly. Besides, there is no chance that sales will increase by obtaining the certificate because there is no matching publicity about what the QCI certificate stands for.

Instead of finding ways to distinguish between manufacturers producing high quality products and others, it would be beneficial to look at things from the consumer's point of view. The most important concerns that the public would like addressed cover five areas. If ASU treatment and drugs are going to be accepted by a wider public, there is a need to insist on specified of testing without which the sale of medicines in retail should not be permitted. This is to protect the public and is not aimed at helping or harming the manufacturers. The main concerns voiced by the public invariably refer to:

1. Anxiety about the presence of heavy metals and minerals exceeding permissible levels.
2. Substitution and adulteration of plant based ingredients.
3. Presence of impurities and contamination.
4. Addition of non-permissible substances like corticosteroids and pain-killers.

5. Labelling and advertisement claims about curing diseases like cancer, cardiac problems, diabetes, reproductive health infections, epilepsy etc. which is expressly forbidden by law.

After discussions with a number of experts, the following course of action appears to be in urgent need of adoption to protect public safety and to give the public the way of knowing whether it is safe to use ASU drugs. Testing for heavy metals ought to be mandatory. For substitutes of medicinal plants, contaminants, impurities and added chemicals, the tests can be outsourced by QCI and consumers encouraged to look for the quality certificate. The technical description of the tests follows:

## Heavy Metal Testing

There is a need for Government to fund setting up of laboratories with sophisticated equipment required to test heavy metal contamination levels. An Inductively Coupled Plasma Analyzer (ICPA) is capable of testing for the presence of all heavy metals like arsenic, mercury, lead, cadmium, zinc, copper, etc. in one sample, with only one injection unlike the Atomic Absorption Spectrophotmetry (AAS) which is widely recommended. AAS needs each metal/mineral to be tested separately and individually. ICPA has detection levels in "parts per billion (ppb)" while AAS can normally test only to "parts per million (ppm) level". The cost of the equipment is reported to be around Rs 80 lakh per laboratory and at least 10 such laboratories would be needed. A large number of private test houses approved by State Drug Controllers are already approved for testing ASU products. Some of these laboratories should be advanced full funding for setting up ICPA facilities on agreed testing rates and a proportion of earnings can be set off against the loan. Five private laboratories (called Public Test Houses) can be funded and the rest can be established by Government at PLIM and the Homoeopathic Pharmacopoeial Laboratory (HPL) among others.

Obtaining certification should be made mandatory for all herbo-mineral and metal-based ASU products. The label should state *"This product contains Metals & Minerals used in ASU medicine within permissible limits."*

## Substitution/Adulteration/Addition of Non-Permissible Substances

In order to confront concerns which are voiced about the presence of impurities, contaminants and the addition of non-permissible substances like cortico-steroids, anti-inflammatory agents and even drugs like Sidenifil (Generic for Viagra) HPLC/HPTLC testing should be encouraged. This can test the presence and absence of all such impurities and additives. Any manufacturer who obtains a certificate showing that the drug is free from contaminants, microbial presence and specified adulterants and chemicals can obtain an AYUSH mark from the QCI approved third-party certification agencies. Testing charges should be settled annually by Department of AYUSH and the label of such ASU products which meet all the test requirements could have a specified "AYUSH mark" which should simply read: *"Quality Certified."*

The Department of AYUSH should launch a massive TV programme to encourage consumers to buy products that carry the *"Quality Certified"* mark on the lines of the ISI mark.

## Manpower to Run Heavy Metal Testing Laboratories

To overcome the need for positioning specialized manpower many Government laboratories have started appointing Young Scientists - like M.Sc./ M. Pharm, B. Pharma as Research Associates on a consolidated payment basis for two-year tenure. These scientists get a learning opportunity and provide valuable professional capability. Such temporary Research positions can be factored into the scheme which should be treated as high priority because it involves public safety.

## Labeling of ASU Products

All manufactures of Ayurveda, Siddha and Unani medicines have to adhere to the requirements of Rule-161 (Part-XVII) of Drugs and Cosmetics Act, 1940, viz. the list of ingredients, pharmacopoeial standards, date of manufacture, batch number, manufacturing license number, the complete address of the manufacturer have to appear on the label. Generally, it is observed that most of the companies write only the name of the State or the PIN code, which does not meet the requirements of law.

The term Ayurvedic Medicine, Siddha Medicine or Unani Medicine should also be printed on the label along with the reference of authoritative book included in First Schedule of the Act. ASU manufacturers do not adhere to this requirement.[5]

Labeling provisions are extremely important and the public has to be educated through consumer campaigns to look for the fulfillment of various requirements on the label. Every stockist or a chemist/shopkeeper engaged in retail sale of ASU products needs to be registered and made responsible for stocking ASU products that fulfill the quality certification requirements for herbo-mineral and metal-based products as prescribed, and abide strictly to labelling requirements. Consumers need to be made aware of these requirements and to look for them.

## Enforcement of Law on Product Claims and Advertisements

Although the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 prohibit claims to treat and cure disorders or conditions specified in Schedule I of the Act, several such diseases are routinely mentioned on the labels of ASU medicine.

It is also surprising that when practically all medicines manufactured by some lesser known units routinely claim to treat and cure diabetes, epilepsy, heart diseases, female diseases, paralysis, rheumatism, and blood pressure, *which are expressly prohibited under the Act,* the State authorities have taken no visible action despite this practice being rampant.

The sale of products that make such claims over the counter presents great risk to the public. The law applies to everyone and there cannot be a separate dispensation for ASU drugs.

It is incumbent on the State Governments to appoint an officer who can scrutinize the labels of ASU medicine and act upon what is found. Contravention of the Act leads to imprisonment or fine or both and offences by companies are also covered.

The Department of AYUSH should commission a survey to ascertain the extent of this practice and also ask the State governments to ensure that labeling claims keep within the ambit of the law. This should always be presented as a public safety issue and not merely as a means of getting after manufacturers.

## Branding Classical (Grantha) Products

Classical ASU products are not allowed to be "branded." By executive orders issued during the last few years further restrictions have been placed on putting any "prefix or suffix" for the purpose of branding. Only the name of the company manufacturing such classical preparations is allowed. However branding has many advantages.

A brand name is a created word around which the manufacturer builds trust, acceptability, or "positioning" in the minds of consumers. The prohibition against branding of classical products has led to a situation where the production and sale of classical medicines is on the wane. Pharmacy experts told the PI that proprietary ASU products are nothing but classical preparations which have been "tinkered" with by omitting a few ingredients or adding some. Most such products are neither great innovations nor new ASU drugs. Modern sounding names are intended to get modern medicine practitioners interested in prescribing them.[6] See table below:

## Modern Sounding Names Introduced by Top Ayurveda Manufacturers

| | |
|---|---|
| Dabur | • Dabur Chywanaprash (Immunomodulator, for general well-being, promotes lung function, reduces chances of falling sick, family tonic),<br>• New Liv Fit (Treats Hepatitis B & E infections, Anti-viral, improves liver functions, Non-alcoholic hepatic steatitis, improves appetite),<br>• Greneem (Adjuvant to oral anti-diabetic, skin health/ infections, acne reducer), |

5. International Journal of Ayurveda Research, October – December 2010 written by Supriya Bhalerao *et.al.* from the Department of Clinical Pharmacology, TNMC and the BYL Nair Hospital, Mumbai, has been brought out that Ayurvedic drug container labels were not compliant with most of the requirements specified in the D&C Act.
6. Source: "Reverse Pharmacology-Translational Impact", Talk delivered at Training Programme on Reverse Pharmacology at Kasturba Health Society, Mumbai, DBA Narayana, April 6$^{th}$, 2011).

| | |
|---|---|
| | • Osteofit (Treats osteoporosis and osteopeniea),<br>• Honitus (Cough and cold remedy),<br>• Pudin Hara (For stomach pain, griping pain, colic, gas and carminative),<br>• Vatika (Anit-dandruff and hair fall reducer hair oil),<br>• Ashokristha (For women problems, menstrual disorders), treats Dysfunctional Uterine Bleeding (DUB),<br>• Restora (Promotes blood circulation),<br>• Stresscom (Anti-stress, treats insomnia, tranquilizer). |
| Himalaya | • Bonnisan (Carminative, griping pain, gas remover) Bonnispaz (Anti-spasmodic, treats colic pain),<br>• Bresol (Improves lung function, asthma treatment),<br>• Liv-52 (Treats Hepatitis B & E infections, Anti-viral, improves liver functions, Non-alcoholic hepatic steatites, improves appetite),<br>• Mentat (Mental performance improver, memory enhancer) Septilin (Immunity builder, natural antibiotic),<br>• Clarina (Anti-acne), Evecare (Uterine care),<br>• Menosan (Treats pre-menopause and post-menopause syndromes) V-Gel (Treats vaginal infections),<br>• Reosto (For Bone health, osteoporosis treatment),· Styplon (Natural styptic for uterus),<br>• Himolin (For sexual health of men),<br>• Himplasia (Prostrate problems treatment),<br>• Speman (Oozspermia and spermatorrhoeia),<br>• Tentex Forte (Non-hormonal sexual stimulant for men),<br>• Abana (Cardiotonic), |

| | |
|---|---|
| | • Geriforte (Anti-stress and adoptogenic for aged),<br>• Pilex (Treats piles),<br>• Systone (Treats urinary stones, helps dissolve urinary stones in- situ),<br>• Rumalaya (Osteo- and rheumatic pain/inflammation treatment),<br>• Diabicom (Treats diabetes),<br>• Serpina (Treats BP). |
| Charak | • Alsarex (For acid peptic disorders/ulcers),<br>• Optizooom (Mental performance enhancer),<br>• Arjunin (Coronary vasodialator, cardiotonic),<br>• Arthrella (Anti-arthritic and remission inducer),<br>• M-2-Tone (For DUB, menstrual problems),<br>• Livomyn (Hepatoprotecive, cholagouge),<br>• Hiponidd (Anti-diabetic and hypolipidemic),<br>• Addyzoa (Spermatogenic, improves male infertility). |
| Bafco | • Acibac (For pepetic disorders),<br>• B-Slim (Anti-obesity),<br>• Diabac (Anti-diabetic),<br>• Rectacare (Treats piles),<br>• Respicare (Improves lung function, cough & cold),<br>• Strex (Anti-stress),<br>• Herbo Iron (Natural haemotonic, treats anemia). |
| Zandu | • Kesarijeevan (Immuno-modulator, for general well being, promotes lung function, reduces chances of falling sick, family tonic).<br>• Zandu Balm (For local pain, muscular pain, headache, clear nostrils, cold),<br>• Brento (Brain tonic),<br>• Satavarex (Promotes mother's milk secretion),<br>• Rhumayog (For treating rheumatic and arthritic pain and inflamation), |

| | |
|---|---|
| | • Zandopa (Natural treatment for Parkinson's disease),<br>• Chandraprabhavati (Effective treatment for urinary tract infections), Sudershan (Quick treatment for many types of fevers),<br>• Trishun (Effective treatment of cold, recurrent cold/cough),<br>• K-4 Tablets (for benign prostrate hypertrophy). |
| Emami | Sona Chandi Chywanprash (Immunomodulator, for general well being, promotes lung function, reduces chances of falling sick, family tonic, and also mental performance enhancer). |
| Dhoot-papeswar | Many Bhasmas (For treatment of acid peptic disorders, migraine, psoriasis, supportive with cancer treatment). |
| Baidyanath | • Rheumartho Gold (for treating rheumatic and arthritic pain and inflamation),<br>• Kesari Kalp (Immunomodulator, for general well being, promotes lung function, reduces chances of falling sick, family tonic). |
| HUL | • Fair & Lovely Ayurveda (Natural skin care with skin lightening benefit),<br>• Brooke Bond Red Label Natural care (Tea with herbal flavors/ extracts for immunity).<br>• Lever Ayush Range of Products (For treating cough/cold, rasayana, pain, infections of skin, antidandruff, etc.) |
| Vasu Health Care | • Ural (For treatment of urinary stones),<br>• Ural BPH (For benign prostrate hypertrophy). |

Industry has not invested in any form of technological research or quality improvement or even improvement in product delivery and packaging as far as classical medicines are concerned. This is because adequate returns are not likely to accrue. It is natural for manufacturers to invest in R&D and product up-gradation when branding is permitted. It should be recognized that classical preparations have a long documented history of safe use. The opportunity of conveying this to the public is lost because there is no "build-up" for these classical products. The result is that the classical drug sales are down to 10% of the total sales and will further reduce if there is no investment in up-gradation of classical products.

One strategy can be to encourage the building up of a chain of franchisees where companies sell their own drugs and where there is a consulting physician to diagnose and offer treatment (Arya Vaidyashala, Kottakal approach). The physician will act as a bridge and the outlets can display logos that keep the public informed of the chain. (Kairali does this for Ayurvedic wellness treatment and massage also).

The second strategy could allow branding of ASU drugs on the lines of consumer essentials like water, wheat flour and sugar and also allopathic generic drugs. Over the years this will bring lot of value to the system and products.

Some examples of how generics are presented are given in the pictures below:

## Drinking Water

*Differentiation of bottled drinking water by:*

- Ozonization
- Naturally Mineralized/added minerals
- Micro-filtration
- Low Sodium
- High Potassium
- Low Hardness
- Tasty

## Wheat Flour

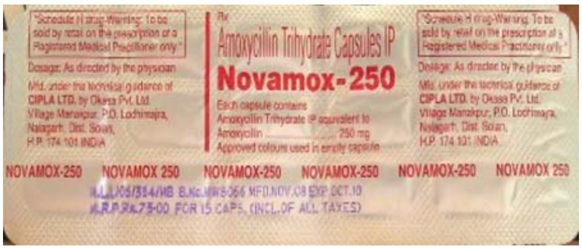
*Differentiation of flour (Atta), rice and salt by:*

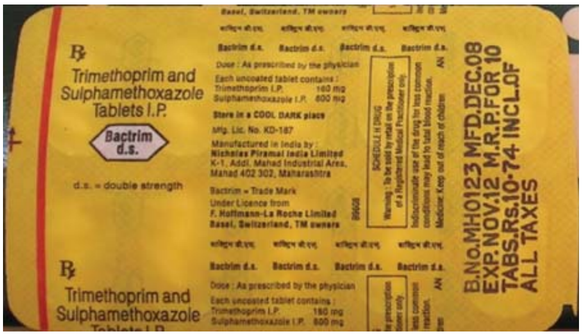
- Brand building
- Quality
- Performance
- Purity

## Generic Drugs

*Differentiation of pharmacopoeial medicine by:*

- Micronization
- Fast dissolution






## Ayurvedic Grantha/Classical Medicines have no Branding and Look Alike

## New Categories of ASU Drugs

Last year a gazette notification was issued introducing new categories like Poshaka/ Balya (supplements category), Soundaryavardhaka (Cosmetics category). The same notification also added another category called "Satvas/Extracts". This is a welcome development but unless it is accompanied by regulations which convey expected standards and what the labeling requirements should state for each category, the consumer will not benefit. This notification needs to be reviewed and standards need to be introduced which tell the consumer e.g. the proportion by percentage of plant-based material compared to the quantity of excipients contained in the product. Only mentioning Tulsi, sandal, aloe-vera is not sufficient.

## New ASU Knowledge-based Drugs

China has provisions to allow new TCM (Traditional Chinese Medicine) drugs using the knowledge based in Chinese medicine after a scientific evaluation of safety, quality and efficacy of such drugs has been done. Only after that marketing authorization is given for such drugs. Therefore when the use of modern technology of extraction/ concentration/fractionation is used to present new dosage forms using the knowledge contained in ASU, this new category of drugs can be introduced. Far from taking away from the strength of Ayurveda it will enhance the reputation of the systems.

## New Ways of Using the Traditional Knowledge Digital Library

Undoubtedly TKDL was established to safeguard against patents and claims being registered by the international patents offices using knowledge which emanate from ASU classics. (Recall the fight against patents given to Haldi, Karela and Jamun when patents were claimed for the medicinal properties of these items which had been used for their medicinal properties for millennia). The argument used by India was that this was not a discovery and the basis for the claim was in the public domain, namely the classical texts of ASU for centuries. TKDL has done a splendid job in preventing the grant of patents but time has come when it has to be seen whether the purpose of all this knowledge should simply rest with one single, limited objective.

There is a need to consider taking the matter back for policy modification by arguing that mankind should benefit from the information which is now available in different languages, in a digitized fashion. Therefore, a policy needs to be drawn up about how this information can be accessed, by whom and for what purpose and under what conditions.

The use of such knowledge would enhance the availability of new ASU drugs that have their basis in ASU knowledge. Already this knowledge is available in published form in public domain in Sanskrit, Tamil and Arabic/Persian/Urdu. Permanent restrictions on the use of TKDL for all times would be self-defeating.

Of course there would be huge worldwide interest if TKDL were to be opened up. Therefore, the risks and benefits of doing so have to be evaluated objectively. Whether there should be a fee for the use of this knowledge has also to be determined as well as which formulations should be made accessible. During discussions it was indicated that because of an embargo placed by a cabinet decision the possibility of using TKDL for any purpose other than for rebutting the grant of patents, has been precluded. This would therefore need intervention at a policy level, guided by whether the outcome would be in the larger public interest. Issues like the use of intellectual property and to whom it belongs will also come up whenever commercial interests are involved and a multidisciplinary group can be asked to go into this. To withold this repository form further use forever will not be a forward-looking way of dealing with the goldmine of data which is in a retrievable form.

# II. Consumer Preference for ASU Products

## Overview of Public Perception About ASU Drugs

Drugs and therapies in Ayurvedic, Siddha and Unani (ASU) systems of medicine are increasingly creating an interest both within the country and abroad. Consumers are broadly aware of the benefits of relying on the ASU treatment regimen and medication. But asked about the range of products that are easily accessible and are in comparatively higher demand, few people can give any response other than referring to a handful of products like Chyawanprash, Triphala, Ashwagandha, Shilajit, Liv-52, Cinkara, Safi, Joshina and the like.

Except for a few well known names like Himalaya, Dabur, Baidyanath, Hamdard, Zandu, etc. hardly any person is aware that the range of products runs into an inventory of anything from 200 to 1000 products produced by over 4000 manufacturers. Owing to iatrogenic problems and also reactions to continued use of certain medication, a new clientele would like to use ASU products but they have little or no information about how to access a good practitioner or understand the applications of the drugs. Some people tend to ask the shopkeepers for remedies for everyday problems, aches and pains. They accept the product offered over the counter provided it carries an indication that it is ASU medicine. Few users ask for product literature or what effect the ingredients can have.

Likewise very few users know the difference between branded products and classical products. They also do not know that certain manufacturers have indeed conducted studies on toxicology, that they have undertaken animal studies to determine safety and efficacy and that their products are comparatively of a higher standard. The present cross-section of consumers is not in the habit of looking at the label or asking for product information. Claims to treat "cancer, diabetes, cardiac ailments" are made routinely on the labels of products sold in the market. Since obtaining a license for manufacturing ASU products is a relatively simple process with little or no requirement for clinical validation of safety and efficacy, there is nothing to distinguish products which are made following a sound manufacturing process, that abide by the Ayurvedic, Unani and Siddha pharmacopoeias and formularies and those that ignore mandatory requirements and simply make claims. In such a situation the public either ignores the ASU products altogether or whenever they opt for them, they rely on big names, family tradition, advertising and word-of–mouth. While they do access products on the advice of practitioners they are also guided by shopkeepers. In the case of allopathic drugs the pharmacist knows what the drug contains and is able to distinguish the salts while suggesting an alternative to the prescribed product. Shopkeepers do not have similar knowledge about ASU drugs. Herbo-mineral preparations should not be taken indefinitely but particularly in the case of sexual dysfunction drugs, it is common knowledge that people buy the products, quite casually from the shops and use them over extended periods.

A section of people access ASU products regularly but what motivates them to use these products, the conditions, signs and symptoms for which they dominantly seek ASU medication is not known except anecdotally. Such studies are available for allopathic drugs but hardly any information is forthcoming in respect of the ASU sector, except for a few scholarly articles and books which normally stop with examples of large manufacturers with large turnovers.

## Rapid Dipstick Survey

A "dipstick" survey was conducted as a part of the product over a six month period, starting September 2010. The aim was to gauge where consumer interest and preference lay. Interviewing consumers would have required a huge sample and may not necessarily have yielded reliable responses. Therefore it was felt that a common questionnaire could be issued to shops dealing with sale of ASU medicines to get a sense of what the shop owners had to say with reference to consumer attitudes and preference.

Several efforts were initially made by contacting research organizations. The PI tried to locate an organization already working in the pharmaceutical field by working through the Department of Pharmaceuticals. Although the senior officers of the

Department including the Secretary were very helpful, after exchanging several e-mails with the contacts given, it was clear that no one was interested in undertaking a survey of this kind. The idea of off loading the survey to a consultant was not inspiring; in the process the questionnaires might be filled by employees of manufacturers to save time. It was apparent that no one was willing to actually visit the stockists and shops of ASU medicines.

Still, the consumers preference needed to be examined in the most practical way as it has direct relevance to benefits accruing to him. In order to conduct such a study in the least possible time but ensuring that the responses were actually filled up in the shops and not by manufactures or practitioners, the PI selected several cities which she felt would give a representative picture about consumer preferences. She contacted the Drugs Controller General of India (DCGI) Dr. Surinder Singh and he readily undertook to direct the zonal inspectors working in different zones in the country to visit a cross-section of shops, city-wise to get the questionnaires filled up. Questionnaires were framed separately for Ayurveda, Unani and Siddha range of products (prepared by Research Officers of the three Research Councils) to ascertain consumer preference. The cities were selected in a way that all the regions and systems got representation. The responses received through the inspectors of the DCGI were then tabulated to arrive at a general picture about consumer preference.

In some places like Maharashtra and Gujarat, the Food and Drug Authority (FDA) was asked by the Health Secretary of the State to help collect this information by sending officials to the shops. This was also done in the case of Rajasthan State and Delhi where the Health Secretary entrusted the work to the local drugs inspector. The faculty and students of National Institute of Ayurveda, Jaipur were also engaged for one day to cover the main shops. In the case of Unani drugs, a Research Officer was sent to Meerut, Moradabad, Anantnag, Srinagar, Pulwama and Jammu city where the use of Unani medicines was comparatively more popular.

## Contents of Questionnaire

a) The fastest moving ASU medicines with reference to different diseases;

b) Consumer's preference on various kinds of ASU products e.g Vati, Avaleha, Kwatha, Ghrita, Taila etc. in case of Ayurvedic drugs (which would indicate prescribing habits also);

c) Consumer's source of knowledge about ASU products and their applications;

d) Difference between the popularity/use of ASU products in different regions of the country;

e) Extent of consumer's concern about efficacy/ safety/quality of the products;

f) Knowledge of the shopkeepers/dispensers of medicines (working in the chemist shops) and of the consumers themselves relating to ASU products;

g) Consumer's concern and perceptions about the ad-mixture of allopathic substances with ASU products.

A copy of the questionnaires is at **Annexure-II(a), II(b), and II(c)** for Ayurveda, Siddha and Unani, respectively. The city-wise findings are at **Annexure-III.**

## 1. Findings on diseases/conditions for which Ayurvedic drugs are preferred

The diseases and conditions for which the Ayurvedic drugs were being purchased were almost similar throughout the country, and these areas were joint disorders, liver disorders, skin ailments, asthma and irritable bowel syndrome. Next to these conditions, the drugs were being purchased for diabetes, obesity, sexual dysfunction, nervous disorders and infertility in a relatively high proportion.

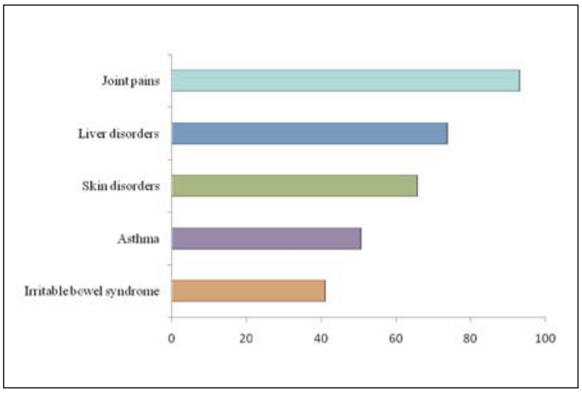



**Figure-1.** Diseases/Clinical conditions for which the Ayurvedic drugs are preferred.

## 2. Findings on the basis on which above responses were given

The basis for giving the information was repeated prescription handled by the shopkeepers followed by the discussion with a cross–section of practitioners.

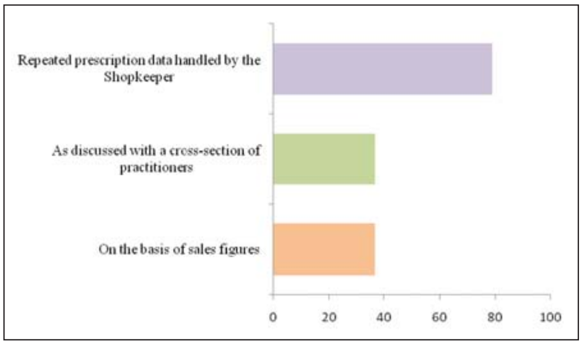



Figure-2. Basis for providing information on consumer preference.

## 3. Findings on the methodology by which majority of consumers access the medication

Most consumers came to the shops seeking the medicine on the basis of prescription, followed by what they had learnt through advertisements and then by word-of-mouth. The recommendations of the shopkeeper/shop assistant/ pharmacist working in the shop also mattered.

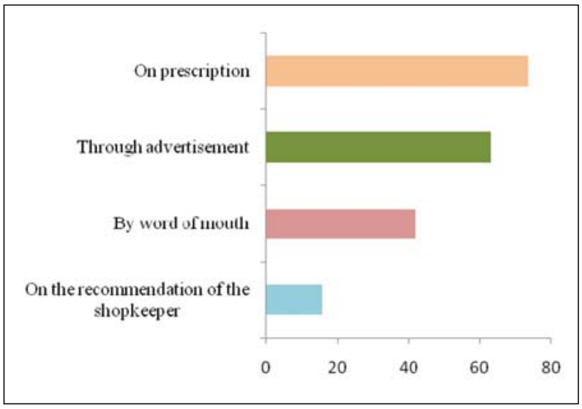



Figure-3. Methods by which majority of consumers access the medication.

## 4. Findings on consumer concern about the quality, safety & efficacy of Ayurvedic products

The consumers showed concern about quality and safety. Questions about efficacy were not asked to the same extent. This indicates that the consumers might be treating efficacy as a matter of individual reaction to the treatment; perhaps the medicine was being used as an alternative to be given a try and not as the first or only mode of treatment.

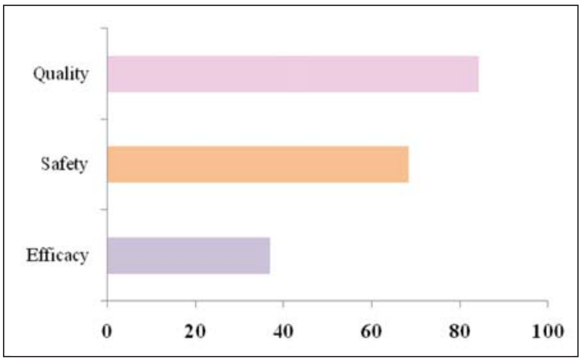



Figure-4. Consumer's concern about products.

## 5. Findings on whether consumers sought products stating the name of the company

The consumers overwhelmingly sought drugs on the basis of a company name and the pharmaceutical representatives had a big role to play in providing information to the shopkeepers working in the shop.

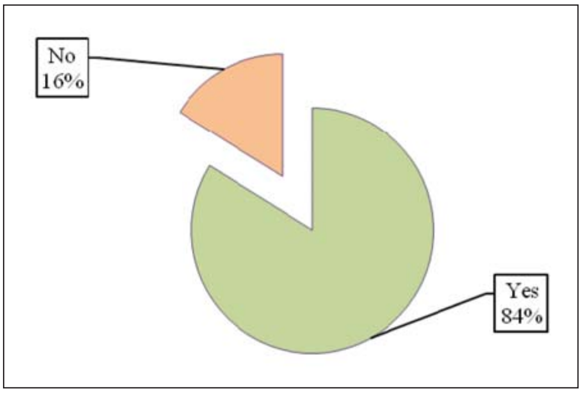



Figure-5. Consumers seeking products stating the name of the company.

## 6. Findings on whether consumers know the difference between the different presentation (decoction/tablet/powder used in Ayurvedic medicine and how they act

In some places like Pune, Indore and the Southern States there was knowledge about the difference between Asava/Arista/Ghrita/Churna but in cities like Delhi and Ghaziabad consumers had no knowledge about different presentation of administration of Ayurvedic drugs.

## 7. Findings on the awareness of the ahopkeepers/pharmacists about the difference between various categories of Ayurvedic drugs and their actions

Owners, shop level staff and pharmacists working in the shops had information about the difference between various categories of Ayurvedic drugs and their application. Pharmaceutical agents also provided them information about this.

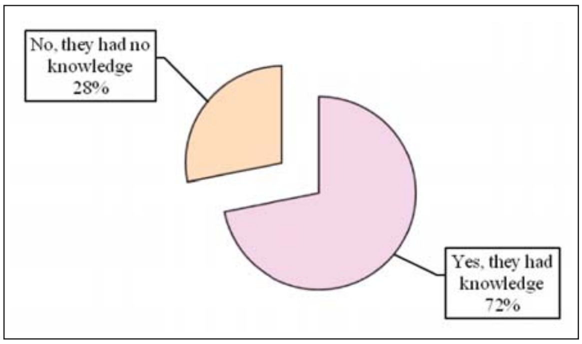



Figure-6. Shopkeeper's awareness about the difference between various categories of Ayurvedic drugs and how they act.

## 8. Findings on consumers' concern about the admixture of allopathic/non-permissible substances in the product

Admixture of allopathic/ non-permissible substances in the Ayurvedic drugs was not a major concern when consumers asked for the medicine. This statement is completely at variance with the huge concern that is expressed by *potential* users of Ayurveda who would like to use Ayurvedic treatment but are acutely concerned about the admixture of non-permissible substances. The response can be attributed to the bias of the shopkeepers.

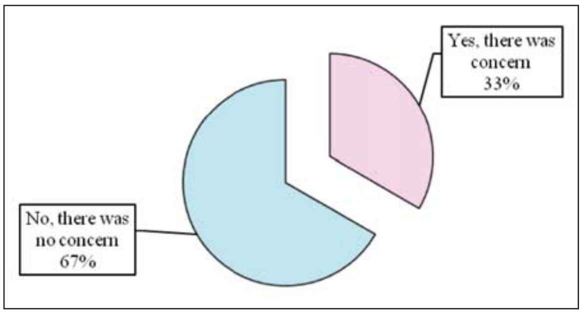



Figure-7. Consumer's concern about the admixture of allopathic or non-permissible substances.

## II. Appraisal of Consumer Preference of Siddha Drugs

The information obtained on various queries on Siddha medicines can be summarized as follows:

## 1. Findings on diseases/conditions for which Siddha drugs are preferred

The diseases and conditions for which the Siddha drugs were being purchased were almost similar throughout the state of Tamil Nadu, and these areas are asthma, liver disorders, joint disorders, skin ailments, gynaecological problems, paediatric diseases and life style disorders. Next to these conditions, the drugs were being purchased for sexual dysfunction, nervous disorders and infertility in a relatively high proportion.

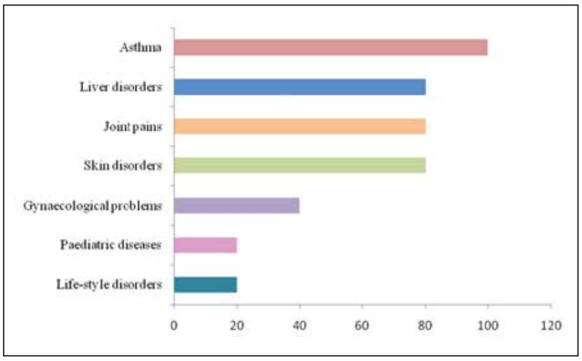



Figure-1. Diseases/Clinical conditions for which the Siddha drugs were preferred.

## 2. Findings on the basis on which data was generated for aforesaid issue

The basis for giving the information was repeated prescription handled by the shopkeepers followed by a discussion with a cross-section of practitioners and finally on the sales figures.

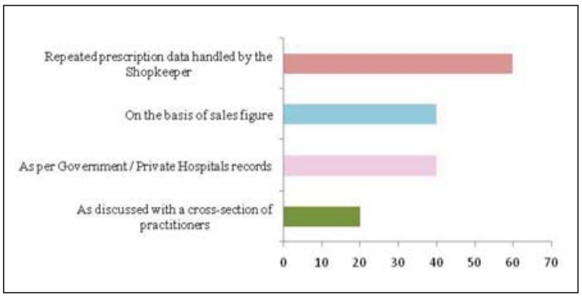



Figure-2. Basis for providing information on consumer preference.

## 3. Findings on the methodology by which majority of consumers accessed the medication

Most of the consumers came to the shops seeking the medicine on the basis of prescription, followed by what they had learnt through advertisements and then by word-of-mouth. The recommendations of the person who dispensed the medicine were relatively less important.

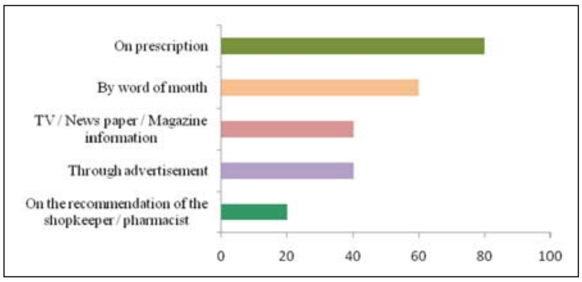



Figure-3. Methods by which majority of consumers accessed the medication.

## 4. Findings on consumers' concern about the quality, safety and efficacy of Siddha products

The consumers showed concern for quality and safety. Questions about efficacy were not asked as much indicating that the consumers were using the drugs on prescription and treated efficacy as a matter of individual reaction. It could also be on account of bias of the shopkeepers who responded.

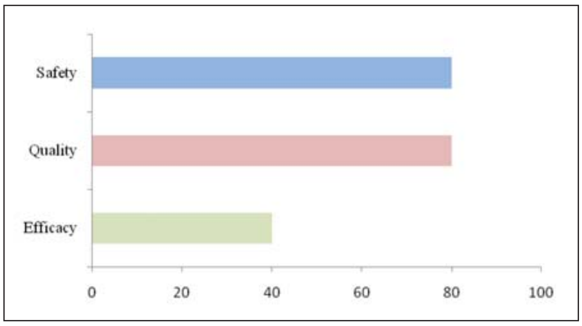



Figure-4. Consumer's concern about products.

## 5. Findings on whether consumers sought products stating the name of the company

The consumers overwhelmingly sought drugs on the basis of a company's name and the pharmaceutical representatives had a big role to play in providing information to the shopkeeper/ pharmacists working in the shop.

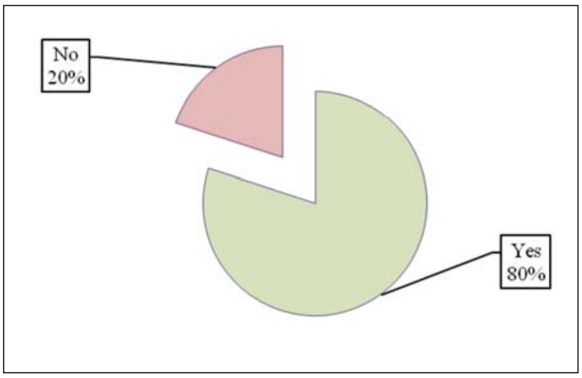



Figure-5. Consumers seeking the products stating the name of the company.

## 6. Findings on whether consumers know the difference between the various categories of Siddha medicines and how they act

The consumers had personal knowledge about the different presentations of administration of Siddha drugs.

## 7. Findings on the awareness of the shopkeepers/pharmacists about the difference between various categories of Siddha drugs and their actions

Owners, shop level staff and pharmacists working in the shops had information about the difference between various categories of Siddha drugs and their application.

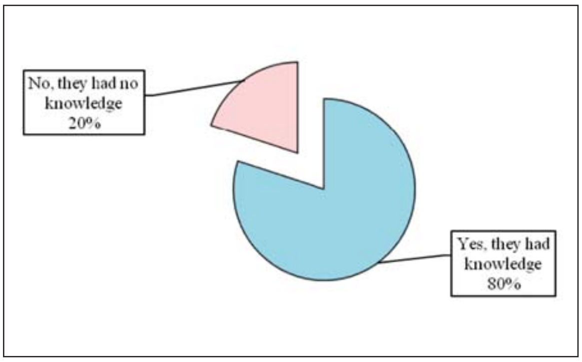



Figure-6. Shopkeeper's awareness about the difference between various categories of Siddha drugs and how they act.

## 8. Findings on consumers' concern about the admixture of allopathic/non-permissible substances in the products

Admixture of allopathic/non-permissible substances in the Siddha drugs was not an issue when consumers asked for the medicine.

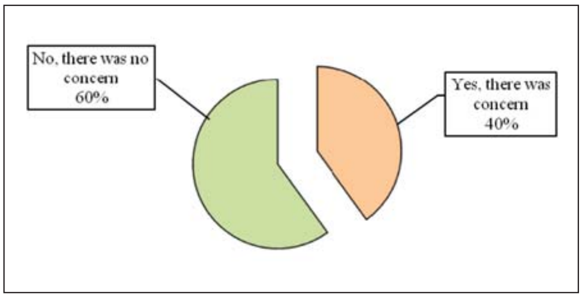



Figure-7. Consumer's concern about the admixture of allopathic or non-permissible substances.

## III. Appraisal of Consumer Preference of Unani Drugs

## 1. Findings on diseases/conditions for which Unani drugs are preferred

The diseases and conditions for which the Unani drugs were being purchased were almost similar throughout the country, and these areas are liver disorders, skin ailments, joint pain, irritable bowel syndrome, respiratory diseases, asthma and cardiac problems. Next to these conditions, the drugs were being purchased for diabetes, sexual dysfunction and infertility in a relatively high proportion.

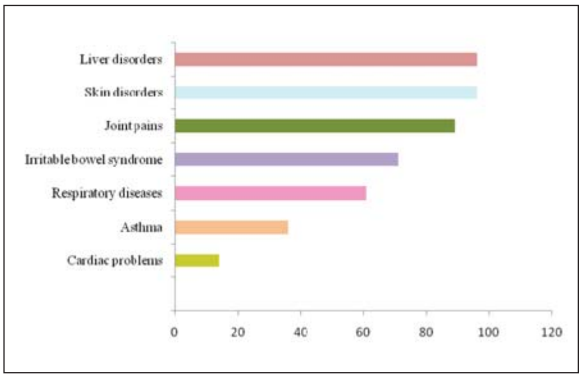



Figure-1. Diseases/Clinical conditions for which the Unani Drugs are preferred.

## 2. Findings on the basis on which data was generated for aforesaid issue

The basis for giving the information was repeated prescription handled by the shopkeepers followed by the discussion with a cross-section of practitioners and finally on the sales figures.

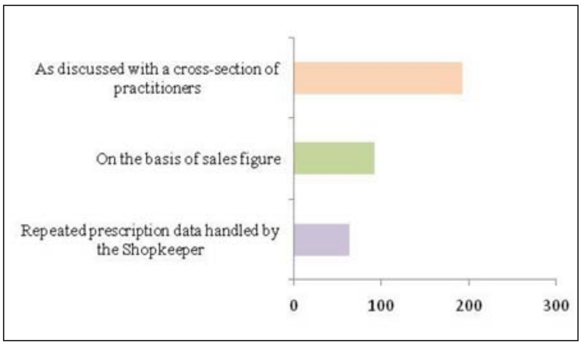



Figure-2. Basis for providing information on consumer preference.

## 3. Findings on which category of Unani medicine appears to be most popular

Raughaniyat (medicated oils), Ma'ajeen (semi solid formulations), Khamirajat (stickly semi-solid formulations) and Haboob (tablets) were the most popular form of drugs among the consumers.

## 4. Findings on methods by which majority of consumers accessed medication

Most consumers came to the shops seeking medicine on the basis of prescription, followed by what they had learnt through advertisements and then by word-of-mouth. The recommendations of the person working in the shop mattered but it was relatively less important.

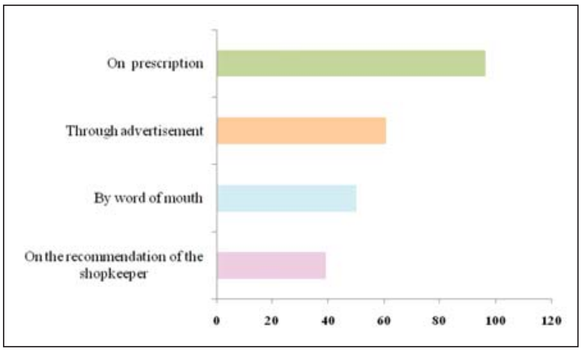



Figure-3. Methods by which majority of consumers accessed the medication.

## 5. Findings on consumer concern about the quality, safety and efficacy of Unani products

The consumers showed concern for quality and efficacy. The safety of the Unani products was of lesser importance.

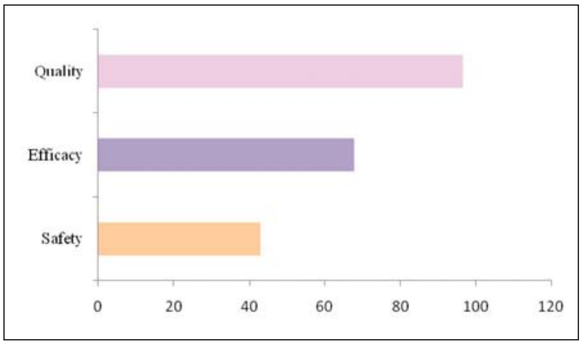



Figure-4. Consumer's concern about products.

## 6. Findings on whether consumers sought products stating the name of the company

The consumers overwhelmingly sought drugs on the basis of a company's name and the pharmaceutical representatives had a big role to play in providing information to the shopkeeper/ pharmacists working in the shop.

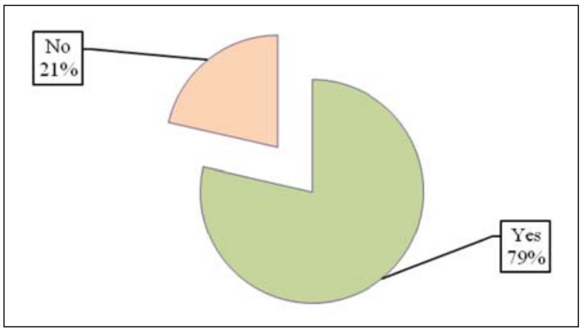



Figure-5. Consumers seeking product stating the name of the company.

## 7. Findings on the awareness of the shopkeepers/pharmacists about the difference between various categories of Unani drugs and their actions

Owners, shop level staff and pharmacists working in the chemist's shops had information about the difference between various categories of Unani drugs. Pharmaceutical agents also provided information on this.

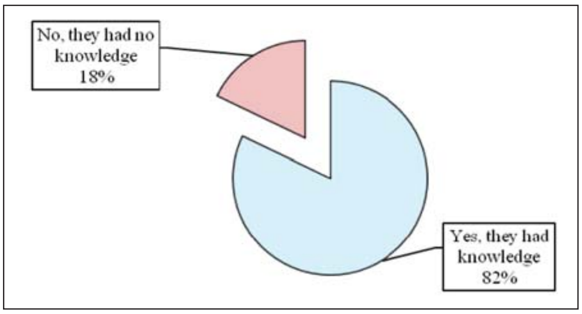



Figure-6. Shopkeeper's awareness about the difference between various categories of Unani drugs and and how they act.

## 8. Findings on consumers' concern about the admixture of allopathic/non-permissible substances in the Unani products

The consumers were concerned about the admixture of allopathic/ non-permissible substances in the Unani drugs.

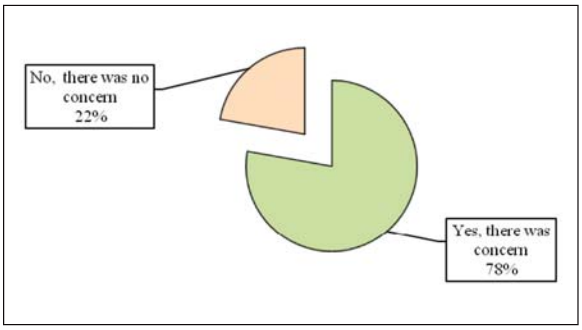



Figure-7. Consumer's concern about the admixture of allopathic or non-permissible substances.

# III. Dipstick Survey of Industries Manufacturing ASU Products

Although the Pharmacopoeia Committees for ASU have laid down standards for single/compound formulations which include determinants of identity, purity and strength of the drugs, due to a variety of factors, including short supply of raw material and the absence of rigorous enforcement, several drugs are being substituted /adulterated with cheaper versions, thereby reducing the quality of the products and bringing the entire system into disrepute.

The principal users of the raw material are the ASU manufactures and it was important to ascertain their point of view relating to legal and enforcement issues primarily. A questionnaire was developed to understand the manufacturing sector's views and experience in responding to quality control and marketing issues; also their interface with suppliers of medicinal plants and the Drug Control/ licensing authorities in the states.

An effort was made to obtain the list of all manufacturers through the Department of AYUSH but since the addresses were incomplete and there was no certainty that the responses would be forthcoming, to save time it was decided to use one of the representative manufacturers' associations. A Questionnaire was sent to respondents identified by the Ayurvedic Drug Manufacturer Association (ADMA) with the instructions that responses should be sent online or by post to the PI directly. The questionnaire is at **Annexure-IV**. The list of manufacturers to whom the questionnaire was sent can be seen at **Annexure-V**.

Responses were received from a cross-section of industries and some of the responses were more detailed than others. Arya Vaidyashala, Kottakal, Shree Dhootpapeswar Pvt. Ltd., Mumbai; Immense Health Care Pvt. Ltd., Natural Remedies, Bangalore; Dabur India Ltd., Sahibabad; Ayu Lab. Private Ltd., Rajkot; Ayur Chem Products, UAP Pharma Pvt.Ltd., Ahemedabad; Charak Pharmaceuticals, Shree Dhanwantari Herbal, Amritsar, S.G. Phytopharma Pvt. Ltd., Kolhapur; Prashant Marico Ltd. Mumbai and Sanjay HERBAL PRODUCTS, New Delhi provided responses which were comparatively detailed.

On $19^{th}$ November, 2010; ADMA organized a one-day meeting where the PI who was able to interact face-to-face with the representatives of industry that attended the meeting. Detailed meetings were also held with the manufacturers whose premises were visited, both in the government and private sector. In-depth interviews were conducted with, among others, S/Shri Ranjit Puranik, the then Secretary of the ADMA Association, Nimesh Shroff who is on the executive body after the elections, Dr Murali of Aryavaidyashala Kottakal, the Directors of Vaidyaratnam Kerala, Dr.Ram Manohar of Ayurveda Trust Coimbatore and Shri Chadershekhar, Managing Director of Tamcol, Chennai. Independent of this, Dr.D.B.A. Narayana, Dr. C.K. Katiyar and Dr.Baba - all three professionals who have worked or are still working with Dabur, Hindustan Lever, Ranbaxy all having the requisite technical background and years of industry experience were also consulted in-depth. The PI called on the Drug Controller General (India) Dr.Surinder Singh and held discussions with him and with Dr. Mitra his Deputy who deals with ASU matters. The responses received through the questionnaires and through discussion are summarized below:

## Industry Responses

### 1. Drug formulation/quality control issues/ estimation of consumer preference of ASU products

From the responses it was seen that 89% of the manufacturers said that there was no representative survey available and nearly 11% of the industries did not respond to the question. Not a single manufacturer gave 'yes' as an answer which

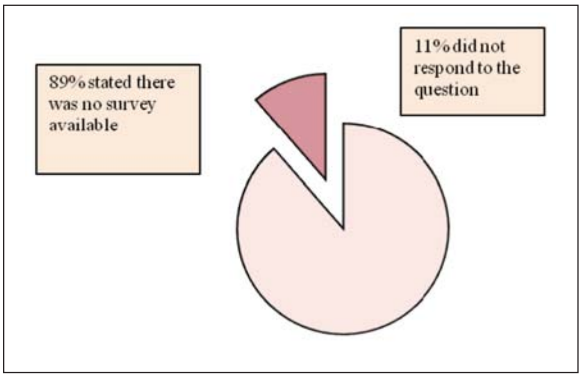



**Figure-1.** Responses received relating to availability of a representative survey about the fastest moving drugs.

indicates that a comprehensive survey was never conducted.

## 2. Manufacturers' willingness to share raw material utilization data

### Findings

Majority of respondents (64%) did not respond enthusiastically. Only 36% said they could submit consumption of raw material data for all the licensed products that were manufactured with batch numbers specified. Data on consumption of raw material is an important requirement as it goes to the root of availability and quality control of ASU drugs. The non-committal response from a majority of industry respondents indicates an apparent unwillingness to treat this requirement seriously.

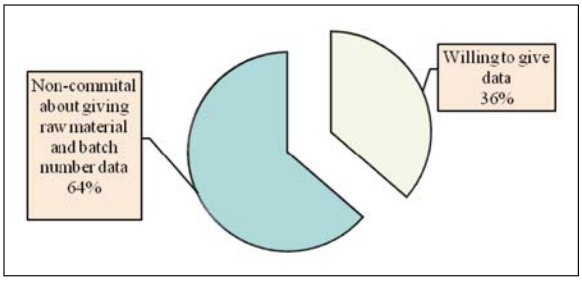



Figure-2. Responses about willingness to submit annual data on the consumption of raw material with batch numbers.

## 3. Important conditions for which ASU drugs have strength

### Findings

The manufacturers confirmed that people predominantly accessed ASU medications for joint pains, skin disorders and gynaecological disorders. Other than these, ASU medications were also accessed for liver disorders, asthma and irritable bowel syndrome. In the 'others' category manufacturers included the following areas among fast moving drugs:-

Tonics and drugs for managing diabetes, obesity, sexual dysfunction, energy boosters, hypertension, hair loss, ageing, memory boosters and blood purifiers. The response of the shopkeepers selling ASU drugs and of the manufacturers was therefore similar. That provides an overall focus for the licensing authorities and drug inspectors to draw samples and exercise oversight. It also gives a focus for awareness campaigns which need to be launched for public benefit.

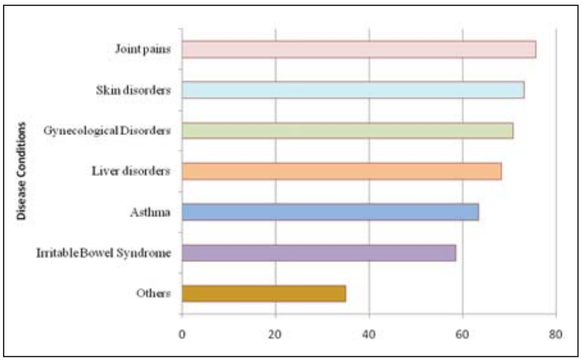



Figure-3. Manufacturers response about main disease conditions for which drugs were accessed.

## 4. Manufacturers' response to the introduction of food supplements and nutraceuticals categories under the food safety and standards act (FSSA), 2006

### Findings

It was found that responses were divided and there was an absence of clarity on the issue. Some companies were aware of the notification but were confused about seeking product permission, especially for single ingredients used in making powders and syrups. Many of the herbs and spices are mentioned both in FSSA as well as Ayurvedic Pharmacopoeia of India. In the Ayurvedic system of medicine, food plays a vital role. For almost every ailment the Ayurvedic classics describe the importance of food regimen. Spices like ginger, black pepper, clove, cinnamon, cardamom, etc. are used in daily food preparation as well as in drugs. To avoid confusion as to whether a medicinal plant is a drug or food, it was recommended that the classification should depend upon the "Intention and claim of use" of the plant.

The respondents favoured a separate regulatory body for nutraceuticals, dietary supplements and food supplements.

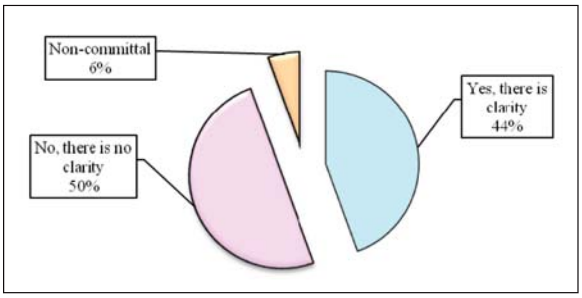



Figure-4. Clarity of manufacturers about registration under (Drugs & Cosmetics Act or Food Safety and Standards Act).

## 5. Regulation of nutraceuticals/dietary supplements/food supplements having a health claim but no therapeutic claim

### Findings

A larger proportion of manufacturers responded as follows:-

- Nutraceuticals should be regulated by a different body.
- The efforts of government should be to form a different Commissionerate in order to regulate FSSA 2006.
- To sell a product effectively it is important to be able to tell the users the merits of the product for which it is used. The recent Gazette notification dated 10.8.10 needs to be expanded further to indicate the health claims which would be permitted.
- However, these products need to be treated separately from "P&P medicine".

## 6. Responsibility for quality control of ingredients and adherence to prescribed processes

### Findings

There were mixed responses to the question whether the owner instead of the quality control manager should be held responsbile for following quality control and process requirements. 36% of the industries responded that the responsibility to have a check on the proper use of ingredients and the prescribed processess should be of 'both', i.e the quality control manager as also the owner of the manufacturing unit. 36% of them said the responsibility should rest only with the quality manager as he is a trained person. 21% said that

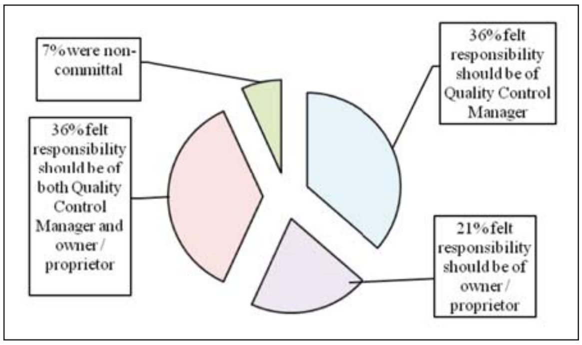



Figure-5. Responsibility/liability for use of proper ingredients and adherence to prescribed process.

the responsibility should not be of the Quality Control Manager which means it should be of the owner. 7% of the industries remained 'Non-Committal'.

## 7. Effectiveness of national medicinal plants board to improve availability and quality of raw materials

### Findings

Nearly 68% of the manufacturers said that the functioning of the National Medicinal Plants Board had not improved the availability of quality raw material. 23% of the industries said that the NMPB had improved the availability. Another 9% from industry remained 'Non-Committal'.

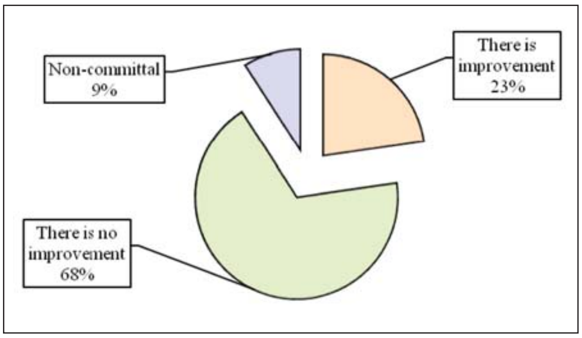



Figure-6. Effectiveness of National Medicinal Plants Board in enhancing quality of raw material.

## 8. Expectations of Industry from national medicinal plants board (NMPB)

Comments of Industry relating to Medicinal Plants availability/quality are summarized below:

a. There is poor awareness about NMPB. A nodal agency like NMPB and its state chapters should bring together all stake holders, industries and farmers. At present, there is no organized way of co-coordinating between the stakeholders.

b. All dealers dealing with raw materials should be registered with NMPB and the board should organize regular inspection of raw materials sold. Manufacturers should be obligated to purchase raw materials only from NMPB's registered dealers.

c. Raw materials should be tested, certified and made available in small packs- (pre-powdered and semi-processed, if possible.) Raw material

suppliers should possess a license to supply raw materials used for ASU drugs.

d. The NMPB generally asks for information from the Industry about the annual requirement of raw materials. It is not possible for many of the Small Scale Industry units to provide the yearly data as the product portfolio keeps changing and is mainly dependent on the future market demand.

## 9. Suggestions of industry relating to NMPB

NMPB should:

- Set up regional clusters to calculate cumulative requirements and inform all manufacturers on a periodic basis.
- Establish multiple crude Drug Repositories and encourage studies that focus on cultivation and conservation.
- Develop the capacity of State Medicinal Plants Boards and make them accountable. In addition, sufficient staff should be engaged.
- Set up an informative website with policies and data on specifications, standards and policies available online.
- Include representatives of small scale manufacturers and traders of medicinal herbs as members of the National Medical Plants Board.
- Develop herbal gardens on land owned by Government organizations in all major cities.
- Encourage State boards to promote herbal plantations as an income generating activity.
- Focus on Panchayats to enable them to access basic know-how on good agricultural practices (GAP) and help them to sell their produce through co-operative efforts.
- Conduct proper testing at collection stage which will improve the situation substantially.
- Insist that manufacturers purchase raw materials from registered dealers only.

## 10. Suggestions of industry relating to drug quality

- The State Quality Testing Laboratories should randomly test raw materials. Plant materials do not expire but they certainly lose their efficacy over time. Therefore, packaged and source certified raw materials should be insisted with a best before date.
- Every invoice should be accompanied by test reports and source of origin of raw material. This practice is very common in pharmaceutical industry and should not result in any harassment.
- Quality tested raw material with Certificate of Analysis as per Ayurvedic Pharmacopoeia of India would be very useful. State Forest Corporations may also be encouraged to provide certified quality raw material as per API, as an additional vending source.
- All traders of medicinal herbs should be registered and their storage conditions should be checked periodically. Drug Testing Laboratories should be established/ recognized by the Government where they can obtain test reports.

A special agency should be designated to procure/ supply/ liquidate the raw material produced by the farmers and to ensure release of immediate payment to them.

### Legislative changes

a. There should be a uniformity mandated by law for grant of license to manufacturers of classical and proprietary medicines. (Today each State follows its own procedures).

b. State government should mandate that all units possess GMP certificate and regularly upload names of units whose licences have been cancelled. Public should be warned about this which will increase credibility.

c. Legally binding registration process for suppliers should be introduced through subordinate legislation. Government should facilitate use of high quality material by establishing on site Quality Control Laboratories for testing raw materials.

## 11. Suggestions to improve public confidence

1. Public confidence is at a low ebb because the composition given on the labels of the same generic product differs from manufacturer to manufacturer. This is because the composition given in Ayurvedic Formulary of India has not

specified the batch size for which the quantity shown is to be used. Hence, every manufacturer writes the composition as per the yield he gets. It is important to lay down parameters or standards by specifying the batch size of the product.

2. Before the State Drug Testing Laboratories become fully functional, the Government should advertise the names of private laboratories (registered) through electronic and print media etc. The endorsement given by Government to selected private laboratories would make a big difference.

3. The awareness campaign should highlight the safety aspects of Ayurvedic products. Mandatory statement should be there in every packet as in the case of "Cigarette smoking is injurious to health" on the lines of: "This product contains no added metals/minerals" or" This product has been tested for absence of non-permissible substances at .....Lab... vide test report ......"

4. Some ASU medicines (Rasa Aushadis and Bhasmas) contain metals and minerals. There should be a caption stating that "this product contains metals/minerals within permissible limits but should be taken only on prescription."

5. At present, there is no motivation for ASU manufacturers to invest in R&D to validate the safety and efficacy of their products. This is because therapeutic pluralism is not permitted. Allopathic doctors are not allowed to prescribe ASU medicines. The ASU practitioners have relatively small practice. Thus, the ASU manufacturers do not see any scope of return on their investments unless the regulatory framework changes in India. Therefore a list of drugs that allopathic doctors can prescribe should be drawn up as this would benefit the public.

## 12. Suggestions for awareness building

- Facilitate continuous interaction between industry associations and consumer associations.
- The best and the most effective way to improve public awareness about ASU products in an ethical manner include:

a. Organization of AYUSH Camps offering free medical checkup and treatment.

b. ASU exhibitions should be held by inviting companies to display their products, and information regarding the therapeutic and prophylactic use of their products should be conveyed through talks.

c. ASU treatment should be provided in all district hospitals with supply/sale of medicines on the premises.

### Suggestions for creating/enhancing awareness about the effectiveness and safety of the products

- The website of the Department of AYUSH should feature comprehensive information about the disease conditions and the availability of medicines in classical forms. This should be linked to State ISM Department's websites.
- The website should give a description of specific medical conditions in layman's language and indicate which types of drugs ASU systems prescribe for these conditions along with whether the drugs contain minerals and metals and the basis for confirming the safety of the herbal ingredients on account of continued usage.

## 13. Suggestions regarding quality certification

a. Advertise and popularize AYUSH standard and AYUSH premium mark to such an extent that majority of consumers start demanding the marks from the ASU manufacturers.

b. The present Quality Council of India (QCI) system of product certifications needs improvement. Too much emphasis has been given on testing only instead of emphasizing steps to improve quality. Excessive testing makes the certification process unnecessarily expensive and out of reach for the majority of manufacturers.

c. Small Scale Industries (SSI) should be given periodic training (at least once in a quarter) with reference to qualitative/quantitative chemical test analysis with the use of minimum sophisticated lab instruments, so that the standard of input material is raised.

# Recommendations

## I. Recommendation Relating to Manufacture of Ayurveda, Siddha and Unani Drugs and Quality Assurance

❖ **Recommendations on quality of raw material:** Steps should be taken to develop up-to-date quality specifications for plant material and minerals and to introduce bar-coding/ pharmacognostic image analysis for the identification of the ingredients. There are broader globally accepted quality parameters and these need to be adopted to cover all the 960 items of plant material that are traded and used by the ASU industry. This work can be done by the autonomous ASU pharmacopoeia commission which has been approved to be established.

❖ **Recommendations to review current Needs of the GMP Compliance:** It may not be possible to ensure that all the manufacturers get GMP compliance because they have not done it for the last nine years. Over 4000 of them appear to be having no licenses and are still producing drugs for sale to the public. These drugs can be harmful as they can contain raw material containing impurities, strong chemicals and non-permissible substances. The drugs containing metals and minerals can cause long-lasting harm. The public interest demands that such items are not allowed in retail sale in the name of medicine.

❖ **Recommendations regarding new category of Traditional Processors:** Create a new category of Traditional Processors/Bheshaja Kalpana producers who can only produce drugs to be supplied to practitioners or their own clientele but not for sale in retail outlets. The responsibilities of the practitioner are recognized under the D& C Act and he is allowed to formulate ASU medicine. Today hardly any practitioner does this by hand himself. The work is outsourced to people who process the drugs as demanded by the practitioners who have an interest in quality of material used. The recommendation is, therefore, to give recognition and legitimacy to this activity which is already permitted under law but never referred to.

- **Recommendation on only GMP compliant units to sell in retail:** Only those who have a GMP compliance certification should be permitted to sell products in retail whether in ASU shops or in regular chemists shops. Special registration of such shops that stock only ASU medicine should be introduced and a small fee collected for such registration. That is the only way of satisfying the need for providing protection to the consumer who has no way of knowing how to distinguish quality products which adhere to GMP and pharmacopoeia standards and those which do not.

- **Traditional processor can run OPD/IPD for his patients:** If the traditional processor runs his own OPD or engages a physician to diagnose and treat patients and to prescribe medicines made in his pharmacy, there is no harm. Therefore there is no need to close down such small units which in their own way are the only vestiges left of tradition. There is no gainsaying that no processor who is selling small quantities for use by practitioners would be interested in deliberately adulterating raw material or selling spurious drugs because sooner or later the clientele would stop using the drugs. [In the chapter on practice, there is a description of several ASU practitioners who are dispensing their own medicine.]

- **Recommendation on enforcement of GMP:** For manufacturers who wish to sell their products in the retail market or act as stockists of ASU medicine, a GMP certification number should form a part of the label as a legal requirement. The selection of manufacturers and products that have to be taken up for in-depth scrutiny should be done through a computerized programme so that there is secrecy and objectivity in selecting the items. Even if 25 cases are taken to their logical conclusion every year in each state, the manufacturers will become conscious of the need to comply. Moreover, if only GMP compliant manufacturers' products

are allowed to be sold in retail, they would be obliged to obtain GMP. This should be projected as a means to protect the public and not as a means to rein in the industry or harass the manufacturers.

- Disposal of court cases: It has been the experience of some state FDA's like Maharashtra that cases relating to spurious/unlicenced/adulterated drugs takes even more than 15 years to be decided and therefore there is no fear of the law. A review of the number of cases charged in courts and their progress needs to be made by every state ISM Departments and an officer in Department of AYUSH should collect this information. Long term pendency of cases need to be taken up with the Registrars of the High Courts by the State Secretaries in charge of ISM.

❖ Recommendations on harmonized licensing system: Presently there is no uniformity in the way applications are entertained for grant of license for the production of P & P or classical medicine. The following recommendations are made:

- There should be a uniform licensing system for adoption across the States based on technical data submission which can be called a dossier approach. Dossier had been suggested by one of the drug manufacturers' associations and the copy is at Annexure-II.

- For classical medicine, the system followed by other countries of having a pre- market notification would be far more efficient. In that case if the manufacturer already has a license for the production of a particular dosage form (Asava, Arishta, Ghrita,) all that he needs to do is to notify the licensing authority that he has added one more product. This is because there is no mind application involved in accepting the license application in respect of classical products as the recipe given in the classical text is simply to be followed.

- Recommendations to expand or alter the QCI scheme: At the moment according to ADMA sources, the QCI Scheme does not seem to have taken off and consumers are unaware of what it denotes. Manufacturers complain that the certification is given product wise and since numerous products are made by each company, it is not cost-effective to seek QCI certification for each product. However consumers of ASU medicine need to be assured of the following:-

(i) That the drugs do not contain contaminants and impurities beyond permissible levels.

(ii) That the metallic and mineral content does not exceed permissible limits

(iii) That there is no addition of chemicals on non-permissible substances (like corticosteroids or synthetic anti-inflammatory agents).

Items (i) and (iii) above can be tested through HPLC/HPTLC testing which can test the presence and absence of all impurities and additives. Any manufacturer who obtains a certificate showing that the drug is free from contaminants, microbial presence specified adulterants and chemicals can obtain an AYUSH mark from QCI approved third party certification agencies. Testing charges should be settled annually by D/o AYUSH at the Centre and the label of such ASU products which meet all these test requirements could have a specified LOGO "AYUSH mark" which should simply read: "QUALITY CERTIFIED."

- Recommendations on heavy metal testing: An Inductively Coupled Plasma Analyzer (ICP) is capable of testing for the presence of all the Heavy metals like arsenic, mercury, lead, cadmium, zinc, copper etc. in one sample, with only one injection. This should be provided to at best to laboratories to start with at a cost of approximately Rs 80 lakh per laboratory. Obtaining certification should be made mandatory for all herbo-mineral and metal based ASU products. The label should say that "the products are within limits for any metal contaminants". For Bhasmas, Rasa Aushadis (Metals/ Herbo-metal/Mineral preparations) the label should say "This product contains Metals & Minerals used in ASU medicine upto permissible levels". Such products containing minerals and metals should not be allowed to be sold in

retail without certification. This has been dealt with earlier while recommending the *registration of shops selling ASU medicine to the general public.*

- **Recommendations to permit branding of classical medicines:** Branding of classical products should be allowed as this will promote more research and development on the original textual recipes. This would be in consumer interest.

- **Recommendations on new categories of ASU drugs:** While it is a welcome step that new categories have been introduced for supplements, cosmetics etc. there is a need to review the regulations. These should help the consumer decide the extent of plant based/herbal material used in the product. The present omnibus provision, will not help. The Regulations may need a change of law for each category which is worth undertaking in consumer interest.

- **Recommendations to create a new category of ASU modern drugs based upon scientific data:** When the use of modern technology of extraction/ concentration/fractionation is used to present new dosage forms using the knowledge contained in ASU, a new category called **modern ASU drugs** can be introduced. Far from taking away from the strength of Ayurveda, it will enhance the reputation of the systems.

- **Recommendations to provide incentives to promote use of cultivated raw materials:** 150% Income Tax exemption on the purchase value of cultivated raw materials and 100% exemption from CST (Central Sales Tax, 4%) may be given on purchase of plant-based raw materials from cultivated sources. MODVAT credit of 40% should be given on the cost of purchase of cultivated raw materials. This will need to be argued at the time of Budget formulation with Ministry of Finance.

## II. Recommendations Relating to Consumer Preference for ASU Products

❖ **Common Information:** It is apparent that people access ASU medicines for specific diseases and conditions. Much more information should be made available about the different modes of administration of drugs for these conditions, the reason why drugs are prescribed choosing so many different dosage forms and how they work not only on the disease but also on addressing the root cause of imbalance. In layman's language, both in English and Hindi. Without going into too much detail, the Department of AYUSH website should provide basic information about the conditions for which the public is buying the drugs. The prototype of the information needs to be placed on the website of the State ISM Departments. There should be a section called Consumer Information as well as Frequently Asked Questions (FAQs) which can focus upon the identified conditions – system-wise, where the public has already shown almost universal interest.

❖ **Capacity building through District ASU officers:** In view of the fact that drugs seem to be sold mainly on the repeated prescription data handled by the shopkeepers, it is very necessary to build up the capacity of both practitioners and shop owners. The State and District ASU officers need to be given standard material which they can share through workshops and training programmes with practitioners, shop owners and stockists so that at least for the most popular areas where public relies on ASU medicine confidence levels are built up and there is some uniformity in approach. This is necessary because people get turned off by an absence of knowledge and concern. In the dipstick survey of common preference, shopkeepers had asked for this know how to be given to them.

❖ **Essential Drug List:** Since most of the drugs are accessed on prescription, it is very necessary that the practitioners are made aware at the city and district level about the quality, safety and efficacy aspects of the drugs. They should be given the list of essential classical drugs which are considered appropriate for given conditions – not in the nature of the drug regimen but so that they receive general guidance.

❖ **Labeling Requirement:** Since consumers are concerned about quality and safety issues, they need to be guided through television

programmes, brochures and leaflets about how to look for good quality. This aspect has to be centralized. The need for proper labeling has been dealt with under the drugs chapter where specific suggestions have been made.

❖ **Commoditization of ASU drugs and products:** The restriction on branding of classical drugs, classical medicine has reduced the sale of classical drugs to hardly 10% of the market. An awareness campaign has to be built up so that the public is aware of the difference between classical and propriety products and the difference between different modes of administration and how it works. In addition, the fact that ASU medication works only if a good practitioner has diagnosed the problem and prescribed the drugs has to be highlighted. Whereas it will not be possible for the government to stop aggressive marketing of company names, what to look for when buying products is something that should be promoted through a central campaign.

❖ **Building Public knowledge:** Awareness about the way different drugs work and their mode of administration is very poor. In the case of western medicine it does not matter because medicine is generally purchased in tablet/ capsule form and sometimes as bottled syrups. In the case of the ASU drugs, there is a lot of difference between different forms of medication and therefore it is important that the public understands this in a simple way which would help to remove the hubris that surrounds ASU medication – mainly among those who have never used it.

## III. Recommendation Relating to Dipstick of Industries Manufacturing ASU Products

(Explanatory Note: the recommendations made by the Industry Association and the responses received from individual manufacturers have been tabulated along with their suggestions in the relevant sub-chapter on industry responses. The recommendations that follow represent a small selection from those recommendations which the PI felt deserved priority.)

❖ **Recommendations for comprehensive survey:** It is time to commission a representative survey through a professional agency so that the licensing authorities and drug suppliers are aware of the fastest moving drugs and focus on those products while sending samples to the drug testing laboratories. The target should be initially on the range of products that fall in the high demand category and affect the largest share of consumers of ASU products.

❖ **Recommendations on enforcement:** Drug Inspectors should enforce compliance by checking at least a given percentage of manufacturing units by operating a computer generated programmme for selection of the manufacturers to be investigated. This would alert manufacturer to maintain the data and make it available. A budget should be included for this activity which should become an essential requirement. The state governments can be funded to use research fellows and pool officers to assist the regular staff which can become a part of an educational scheme.

❖ **Recommendations on making the licensing procedure transparent and uniform :**

- **Uniformity of licensing procedure:** A uniform process for receiving, time taken for examination and grant of licences for both classical as well and P & P drugs should be described by way of guidelines and the State ISM Departments should be asked to have this adopted by the licensing authorities.

- The website of the State Government should indicate the number of licensed manufacturers and number of products licensed in respect of each manufacturer.

- The number of survey/statutory samples obtained and the number of licenses cancelled/suspended and prosecutions launched should be updated on the website of the state ISM departments and the office of the State Drugs controller. Regular news items should be given to Pharmabiz and similar publications. Only then would public faith that a quality control mechanism exists get strengthened. At present neither industry, shopkeepers or consumers have any faith that even rudimentary surveillance is being maintained.

- Failure to update information on new licences issued and cancelled should be

monitored and an official engaged on contract to be positioned under Pharmacopoeial Laboratory for Indiam Medicine (PLIM) with exclusive charge for follow-up with individual states. Exception reports of non furnishing of data should be sent to Department of AYUSH which in turn can alert the Directors of ISM / AYUSH in the States that information has not been updated in time. This would ensure that survey and statutory samples are regularly collected and updated which will keep up the pressure on the State licnencing/drugs control authorities.

- Since the licensing authority has the final say and there is no watch dog to oversee that the work performed by the licensing authority has been done diligently, it is very necessary for senior officers in the state government to monitor the work and performance of the licensing authorities. Such officers could be asked to collect quarterly reports from licensing authorities on licenses renewed, and new licenses granted to check progress. The PI found that licensing authorities were taking a very routine interest in licensing work and were not aware of basic data concerning this their own area of work although it was their direct responsibility. Combining the functions of the Director ISM and licencing authority should be stopped.

❖ Recommendations on implementation of pharmacopoeial standards: Pharmacopeial standards are mandatory but during discussion with representatives of industry there was an admission that pharmacopoeial standards remained on paper and in the absence of enforcement it was optional whether to follow the standards prescribed. Therefore, the lifting of a prescribed number of survey / statutory samples should be strictly followed by the drug inspectors. Shortage of manpower for lifting samples and for obtaining test reports from the State drug testing laboratories needs to be addressed urgently. (As suggested earlier to use of pool officers and research staff is not prohibited and that could be managed as a part of a research study.

❖ Recommendations on giving primacy to quality control – The awareness campaign should highlight the safety aspects of Ayurvedic products. A mandatory statement should be there on the label of ASU products being sold as medicine on the lines of:: "This product contains no metals/minerals" in the case of purely herbal medicine or "This product has been tested for absence of non-permissible substances at …..Lab… vide test report number …. dated……". This is very necessary in the case of products/drugs being used for conditions like diabetes where maximum suspicion about the admixture of steroids and chemicals has caused anxiety in the public.

- Labeling requirements: Labeling requirements for ASU drugs have been specified but research has shown that these provisions are flouted. The states should prosecute a few offenders each year and the registered chemists should be made responsible for stocking products that follow labeling requirements including to sell products carrying a GMP certificate only. Public should be asked to look for GMP number.

- Owner of the company/Directors to be made responsible for adherence to quality control standards: The Quality Control Manager is only an employee and is generally not assertive. In some industries visited by the PI, the stacking of raw material and the general condition of hygiene was very poor. If the Directors of the company are made at least partially responsible, they would take greater interest in this aspect.

- Raw materials stacked by the manufacturers. Plant material loses efficacy over time. Therefore new regulations, need to be introduced under the Drugs and Cosmetics Act asking for packaged, source certified raw materials with a best before date.

- Every invoice should be accompanied by test reports and source of origin of raw material. This practice is very common in pharmaceutical industry and should not result in any harassment.

- Quality tested raw material with Certificate of Analysis as per API should be the

medium–term aim. State Forest Corporations may also be encouraged to provide certified quality raw material as per API.

- A Scheme for registration of vendors (raw material traders) supplying ingredients to ASU drug manufacturers should be introduced and manufacturers asked to maintain vendor data.
- QCI certificate and Simpler Alternatives: The QCI certificate is very expensive and very few manufacturers are likely to opt for getting the certification. It would be better to start a simpler scheme for certification, for products which have been subjected to tests in recognized laboratories and which conform to packaging and labelling requirements as laid down.
- The quality mark should be publicized and consumers advised to look for the mark as was done in the case of the ISI mark in its formative years. Manufacturers could be given a limited window of two years to get the mark before the awareness campaign for consumers is put into action. A tie up with Department of Consumer Affairs would help.

❖ Recommendation on optional course or a Diploma in Ayurveda at the postgraduate level in allopathic medical colleges: This suggestion of industry should be pursued through discussion with the Department of Health, Ministry of Health & Family Welfare and Medical Council of India. Initially the purpose of this course should be to provide exposure to the allopathic postgraduates to witness the application of panchakarma and other therapeutic treatment regimens. Theory can be taught on the lines of courses run by GAU. In that way, allopathic doctors would be more inclined to partner with ASU doctors particularly in handing difficult and chronic cases of rheumatology, infertility, neurological and musculoskeletal conditions, immobility including recovery after stroke and cerebral palsy cases. The examples of Medanta and Moolchand Hospital in Delhi should be explained to the Department of Health/ MCI.

❖ Recommendation on enforcing law on publication of advertisements about magical cures and misleading claims: This needs to be taken up with the Press Council of India and publishers of newspapers and magazines. State governments should be asked to engage college interns who can go through the newspapers and prepare monthly lists of English as well as vernacular newspaper advertisements which break the law. The State Health/ ISM secretaries should be encouraged to take this up officially with the publishers in the case of regional newspapers and magazines. This should be received frequently at a central level as it is one of the major factors affecting the reputation of ASU practitioners and drugs.

❖ Recommendation on setting up a consumer forum on ASU drugs: A consumer Forum should be set up State-wise in co-ordination with Department of Consumer Affairs so that issues like medical service by practitioners, quality of drugs (fulfilment of pre-testing and labeling to be fulfilled) are given prominence. The awareness compaign for ASU treatment and drugs can be a part of the common awareness compaigns already undertaken by Department of Consumer Affairs on Television.

❖ Recommendation on Toll Free facility for ASU products: A "Whom to Contact" in case suspicious products have to be reported should be prominently available on the AYUSH and State ISM websites along with a helpline numbers accessible at district level, Toll Free. No such facility is presently available. This is different from the Adverse Drug Reaction Registry which is being maintained by IPGT&RA, GAU.

# Annexure-I

## Suggested Dossier for Application of License for P&P Medicine

| # | Generally Required Data |
|---|---|
| 1 | Certificate - GMP |
| 2 | Certificate - License Issued by Local Food and Drugs Authority |
| 3 | Certificate - Free sale |
| 4 | Composition |
| 5 | Rationale |
| 6 | Therapeutic Indications |
| 7 | Dosage and Administration |
| 8 | Herbal Raw Material Profile<br>Family<br>Latin Name<br>Common Names<br>Parts Used<br>Habitat<br>Botanical Description<br>Pharmacognosy<br>Phytochemistry<br>Properties<br>Indications<br>Therapeutic Area<br>References |
| 9 | Manufacturing Data (SOP) |
| 10 | Raw Material Specifications |
| 11 | Packaging Material Specifications |
| 12 | Work in-process Specifications |
| 13 | Finished Product Specifications |
| 14 | Analytical and Stability Data |
| 15 | Certificate of Analysis |
| 16 | Method of Analysis |
| 17 | Specimen - Printed Package Insert |
| 18 | Sample of the Preparation in its offered Packing |
| 19 | Specimen - Printed Label |
| 20 | Specimen - Printed Carton |
| 21 | Safety Studies |
| 22 | Clinical Trial Report |

# Annexure-II(a)

## Questionnaire on Consumer Preference of Ayurveda Products

**Relates to:** Drugs and ASU products widely used by public for obtaining treatment / mitigation of disease or reducing debilitating conditions under Ayurveda, Siddha and Unani (ASU) systems of medicine:

### Introduction

1) Ayurvedic, Siddha and Unani medicine have been increasingly creating an interest within the country and abroad. Consumers are broadly aware of the benefits of relying on the ASU treatment regimens, medications and applications. But asked about the range of products that are easily accessible and are in comparatively higher demand, few people can give any response other than referring to a handful of products like Chawanprash, Liv 52 or Triphala and similar names.

2) Except for a handful of industries (eg Himalaya, Dabur, Baidyanath, Hamdard and Zandu) even the names of the manufacturers are not identifiable to most people. The safety and efficacy of the medicines is little known as many products do not match the level of scrutiny that is increasingly demanded for medicine to be accepted as efficacious, having minimal side effects which too are known and declared.

3) Some manufacturers do conduct studies on toxicology, undertake animal studies, publish monographs and their products have been in the market for several years. But since licensing of new ASU products (which all use formulations in the codified texts) is a relatively simple process with no requirement for clinical validation of safety and efficacy, there is nothing to distinguish products which are made following a sound manufacturing process, that abide by the Ayurvedic pharmacopoeia and formularies and those that simply make claims. In such a situation the public either ignores the ASU products altogether or whenever they use an ASU product, they rely on big names, family tradition, and word-of–mouth recommendations or access the products over-the-counter on the advice of practitioners or pharmacists employed by chemists. Practitioners either dispense medicine from their own pharmacies or give prescriptions- which forms a temporary basis for the selection of drugs .

4) Given this background, it is very difficult for an uninformed person to understand the range of hundreds of ASU products whether classical products or patent proprietary items. A majority of people remain ignorant about what is available, by what name the products can be accessed or how one product differs from the other. On the other hand, a section of people continue to access ASU products either over-the-counter or on the prescription of practitioners but what motivates them and the conditions, signs and symptoms for which they dominantly seek ASU medication is not known except anecdotally. Similar studies are available for allopathic drugs but hardly any information is forthcoming in respect of the ASU sector, except for a few scholarly articles and books which normally stop at examples of large manufacturers with a turnover of Rs 50 crore or more.

5) As far as the consumer is concerned, apart from knowledge and access issues, concerns about quality control are increasingly deterring even the most committed and determined users who on principle would like to avoid allopathic medicine because of fear of chemicals and harsh side-effects. But the absence of standardization, poor enforcement, units functioning without GMP and issue of licences in a perfunctory manner is the depiction that consumers read about. In actual fact, these realities continue despite several legal requirements having been imposed and measures to improve standardization and quality control having been mandated.

## Questionnaire

1. What are the disease/clinical conditions for which people access the ASU drugs — is it possible to say with any degree of authenticity that (for example) the fastest moving drugs are purchased for

| | | | |
|---|---|---|---|
| Skin disorders (1) | ☐ | Joint pains (2) | ☐ |
| Irritable bowel syndrome (3) | ☐ | Liver disorders (4) | ☐ |
| Asthma (5) | ☐ | | |

Any other ____________________

2. The basis for giving this information may be provided either

| | |
|---|---|
| On the basis of sales figures (1) | ☐ |
| Or repeated prescription data handled by the pharmacist (2) | ☐ |
| Or as discussed with a cross-section of practitioners. (3) | ☐ |

3. Which category of Ayurvedic/Unani medicine appears to be most popular and for what treatment is that used? [Add Boxes for the following:

| | | | |
|---|---|---|---|
| Vati (1) | ☐ | Avaleha (2) | ☐ |
| Churna (3) | ☐ | Syrup (4) | ☐ |
| Kwatha (5) | ☐ | Parpati (6) | ☐ |
| Ghrita (7) | ☐ | Taila (8) | ☐ |
| Asava/ Arishta (9) | ☐ | Rasayoga (10) | ☐ |
| Gugullu (11) | ☐ | Loha (12) | ☐ |

Others ____________

### Note

**Asava and Arista:** Asavas and aristas are medicinal preparations made by soaking the drugs, either in power form or in the form of decoction (kasaya), in a solution of sugar or jiggery, as the case may be, for a specified period of time, during which it undergoes a process of fermentation generating alcohol, thus facilitating the extraction of the active principles contained in the drugs. The alcohol, so generated also serves as a preservative.

**Arka:** Arka is a liquid preparation obtained by distillation of certain liquids or of drugs soaked in water using the Arkayantra or any convenient modern distillation apparatus.

**Kvatha Curna:** Certain drugs or combination of drugs are made into coarse power (Javkut) and kept for preparation of kasaya. Such powers are called kvatha curna.

**Guggulu:** Guggulu is an exudates (niryasa) obtained from the plant *Commiphora mukul.* Preparations having the exudates as main effective ingredient are known as Guggulu.

**Ghrta (Snehakalpa):** Ghrtas are preparations in which ghee is boiled with prescribed kasayas (decoctions) and kalkas of drugs according to the formula. This process ensures absorption of the active therapeutic principles of the ingredients used.

**Curna:** Curna is a fine power of drug or drugs.

**Taila:** Tailas are preparations in which taila is boiled with prescribed kasayas (decoction) and kalkas of drugs according to the formula. This process ensures absorption of the active therapeutic properties of the ingredients used.

**Lepa:** Medicines in the form of a paste used for external application are called lepas.

**Vati and Gutika:** Medicine prepared in the form of tablet or pills are known as Vati and Gutika. These are made of one or more drugs of plant, animal or mineral origin.

**Vartti, Netrabindu and Anjana:** Medicines used externally for the eye come under category of Vartti, Netrabindu and Anjana Netrabindu is prepared by dissolving the specified drugs in water or kasaya and used as eye drop.

**Rasayoga:** Preparations containing mineral drugs as main ingredients are called Rasa Yogas. They may be in pill form. They are mixed and triturated together.

**Lauha:** Lauha kalpas are preparations of Lauha Bhasma as main ingredient added to other drugs.

If the respondent is an Association like ADMA or Chemist's Associations, the percentage share of the market occupied by 25 to 30 fast moving drugs and medicaments under each ASU system covering a range of 5-10 clinical conditions may be given. The reply may be divided into classical products and patent proprietary products as far as the fastest moving drugs are concerned. [Replies received from representative number of A, B and C category chemists in selected cities and areas within the city serving different strata of society may be given for which boxes have to be created].

### Classical formulation with dosage form and indications

1. Ashwagandha Churna (Churna)/General debility/Health promoter ☐
2. Triphala Churna (Churna)/Constipation/Eye diseases ☐
3. Sitopaladi Churna (Churna)/ Cough, Cold & Asthma ☐
4. Lavana Bhaskar Churna/ Indigestion, colic pain ☐
7. Ashokarista/ Menstrual problems ☐
8. Dasamularista/ Backache, after delivery, nervine tonic ☐
9. Draksharista/ General debility, asthm. ☐
10. Arjunaristha/ Heart disease ☐
11. Saubhagya shunthi khanda/After delivery ☐
12. Kutaja Ghanavati/ Dysentery, Diarrhoea ☐
13. Chitrakadi Vati/ Indigestion, Loss of appetite ☐
14. Arogyavardhini vati/Skin diseases, Liver disease ☐
15. Haridrakhanda/Allergic Conditions ☐
16. Triphalaghrita/ Eye diseases ☐
17. Phalaghrita/ Infertility ☐

18. Yogaraj Guggulu/ Neurological diseases, Osteoarthritis ☐
19. Kanchanara Guggulu/ Goitre, tumor ☐
20. Mahanasayan Taila /Osteoarthritis, Neurological disorders ☐
21. Jatyadi taila/ Wounds, ulcers ☐
22. Saptamrita Lauha /Eye diseases ☐
23. Chyavanprash(Avaleha)/ Immunity Promoter ☐
24. Vyaghri Haritaki(Avaleha)/ Bronchitis, Bronchial Asthma ☐
25. Avipattikara churna/ Hyperacidity ☐
26. Hingvashtaka churna/ Indigestion, Flatulence ☐
27. Mahamanjishthadi Kvatha/ Skin diseases, Gout ☐
28. Chandraprabha Vati /Diabetes, Urogenital diseases ☐

### Proprietary medicine with Dosage form and indication

1. M-Vasaka (Syrup)/ Cough & Cold ☐
2. M-Liv (Syrup/Tab.)/ Liver disorders ☐
3. Live-52(Syrup/Tab.) Liver disorders ☐
4. M2 Tone (Syrup)/ Excessive uterine bleeding ☐
5. Posex (Tab.) ☐
6. Shatavarex (Granules)-Lactation ☐
7. Shankhapushpi(Syrup)/Memory enhancer ☐
8. Septilin (Syrup)/Respiratory tract infection, Immune promotor ☐
9. Rhumalaya (Tab.) / Arthrits ☐
10. Reosto (Tab.)/Osteoporosis, osteopenia ☐
11. Step (Syrup/tab.) RTI/UTI ☐
12. Zulcer gel (Suspension)/Hyper acidity ☐
13. Pilex (Tab./ointment)/Piles, fissures. ☐
14. V-gel (Gel)/Vaginitis ☐
15. Abana (Tab.)/Cardiac disorders ☐
16. Serpina(Tab.)/Hypertension ☐
17. Cystone(Tab.)/Urinary stone ☐

18. Livomin(Syrup)/Liver disorders ☐

19. Rumasyl (Oil)/Arthritis ☐

20. Shilajit (Capsule)/Aphrodisiac ☐

21. Spemen forte (Tab.)/ Oligospermia ☐

22. Vomitab (tab. & syrup)/Vomiting during pregnancy ☐

23. Neeri (Syrup)/Urinany tract infection ☐

24. Koflet (Syrup)/cough ☐

25. Crux (Syrup)/cough ☐

4. A vast number of the medicaments available under the ASU systems can be purchased over the counter: (OTC.) Please indicate how the majority of consumers access the medication –

It is on prescription (1) ☐

By word of mouth (2) ☐

Through advertisement (3) ☐

On the recommendation of the chemist (4) ☐

5. There is considerable difference between the reliance placed upon the ASU products in

South India (1) ☐

Please specify the difference ____________________

North India (2) ☐

Please specify the difference ____________________

West India (3) ☐

Please specify the difference ____________________

*Note: Please specify the differences that are apparent between the three regions*

6. Do consumers seek product information on

Quality (1) ☐

Efficacy (2) ☐

Safety (3) ☐

If so up to what extent? ____________________

7. Do consumers ask for products stating the name of the company?

Yes (1) ☐ No (0) ☐

Do consumers know the difference between the different categories of ASU medicine and how it acts?

Yes (1) ☐ No (0) ☐

8. Are the pharmacists working in the chemist shops aware of the difference between different categories of ASU drugs and how they act?

Yes (1) ☐ No (0) ☐

If yes, please specify ______________________________

Do the company representatives speak about this aspect?

Yes (1) ☐ No (0) ☐

9. Do consumers show concern about the admixture of allopathic or non-permissible substances?

Yes (1) ☐ No (0) ☐

10. What suggestions can be made to improve public awareness about ASU products? What steps can be taken both by the government and by industry to enhance public awareness on how to distinguish between products? QCI is a voluntary scheme. Can any other approach be suggested?

______________________________

# Annexure-II(b)

## Questionnaire on Consumer Preference of Siddha Products

**Relates to:** Drugs and ASU products widely used by public for obtaining treatment / mitigation of disease or reducing debilitating conditions under Ayurveda, Siddha and Unani (ASU) systems of medicine:

### Introduction

1) Ayurvedic, Siddha and Unani medicine have been increasingly creating an interest within the country and abroad. Consumers are broadly aware of the benefits of relying on the ASU treatment regimens, medications and applications. But asked about the range of products that are easily accessible and are in comparatively higher demand, few people can give any response other than referring to a handful of products like Chawanprash, Liv 52 or Triphala and similar names.

2) Except for a handful of industries (eg Himalaya, Dabur, Baidyanath, Hamdard and Zandu) even the names of the manufacturers are not identifiable to most people. The safety and efficacy of the medicines is little known as many products do not match the level of scrutiny that is increasingly demanded for medicine to be accepted as efficacious, having minimal side effects which too are known and declared.

3) Some manufacturers do conduct studies on toxicology, undertake animal studies, publish monographs and their products have been in the market for several years. But since licensing of new ASU products (which all use formulations in the codified texts) is a relatively simple process with no requirement for clinical validation of safety and efficacy, there is nothing to distinguish products which are made following a sound manufacturing process, that abide by the Ayurvedic pharmacopoeia and formularies and those that simply make claims. In such a situation the public either ignores the ASU products altogether or whenever they use an ASU product, they rely on big names, family tradition, and word-of–mouth recommendations or access the products over-the -counter on the advice of practitioners or pharmacists employed by chemists. Practitioners either dispense medicine from their own pharmacies or give prescriptions-which forms a temporary basis for the selection of drugs.

4) Given this background, it is very difficult for an uninformed person to understand the range of hundreds of ASU products whether classical products or patent proprietary items. A majority of people remain ignorant about what is available, by what name the products can be accessed or how one product differs from the other. On the other hand, a section of people continue to access ASU products either over-the-counter or on the prescription of practitioners but what motivates them and the conditions, signs and symptoms for which they dominantly seek ASU medication is not known except anecdotally. Similar studies are available for allopathic drugs but hardly any information is forthcoming in respect of the ASU sector, except for a few scholarly articles and books which normally stop at examples of large manufacturers with a turnover of Rs 50 crore or more.

5) As far as the consumer is concerned, apart from knowledge and access issues, concerns about quality control are increasingly deterring even the most committed and determined users who on principle would like to avoid allopathic medicine because of fear of chemicals and harsh side-effects. But the absence of standardization, poor enforcement, units functioning without GMP and issue of licences in a perfunctory manner is the depiction that consumers read about. In actual fact, these realities continue despite several legal requirements having been imposed and measures to improve standardization and quality control having been mandate.

## Questionnaire

1. What are the disease/clinical conditions for which people access the Siddha drugs — is it possible to say with any degree of authenticity that (for example) the fastest moving drugs are purchased for

| | | | |
|---|---|---|---|
| Skin disorders (1) | ☐ | Joint pains (2) | ☐ |
| Gynaecological problems (3) | ☐ | Liver disorders (4) | ☐ |
| Asthma (5) | ☐ | Life-style disorders (6) | ☐ |
| Paediatric diseases (7) | ☐ | | |

Any other ______________________________

2. The basis for giving this information may be provided either

On the basis of sales figures (1) ☐

Or repeated prescription data handled by the pharmacist (2) ☐

Or as discussed with a cross-section of practitioners. (3) ☐

Or as per Govt. Hospitals / Private Hospital records (4) ☐

3. Which category of Siddha medicine appears to be most popular and for what treatment is that used?

| | | | |
|---|---|---|---|
| Mathiri (Tablets) (1) | ☐ | Senthooram (2) | ☐ |
| Churnam (3) | ☐ | Kudineer (Decoction) (4) | ☐ |
| Parpam (5) | ☐ | Kalimbu(Ointment) (6) | ☐ |
| Lehiyam (7) | ☐ | Thailam (8) | ☐ |
| Manappagu (Syrup) (9) | ☐ | Otradam (Fomentation) (10) | ☐ |
| Vethu (Steam Bath) (11) | ☐ | Thokkanam (Massage Techniques) (12) | ☐ |

Varmam (Therapeutic pressure points) (13) ☐

Patru (Paste for external applications) (14) ☐

If the respondent is an Association like SDMA (Siddha drugs Manufacturing Association) or Chemist's Associations, the percentage share of the market occupied by 25 to 30 fast moving drugs and medicaments under Siddha system covering a range of 5-10 clinical conditions may be given. The reply may be divided into classical products and patent proprietary products as far as the fastest moving drugs are concerned. [Replies received from representative number of A, B and C category chemists in selected cities and areas within the city serving different strata of society may be given for which boxes have to be created].

4. A vast number of the medicaments available under the Siddha systems can be purchased over the counter: (OTC.) Please indicate how the majority of consumers access the medication –

It is on prescription (1) ☐

by word of mouth (2) ☐

through advertisement (3) ☐

on the recommendation of the chemist (4) ☐

TV / News paper / Magazine information (5) ☐

5. There is considerable difference between the reliance placed upon the Siddha products in

South India (1) ☐

Please specify the difference ________________________________

North India (2) ☐

Please specify the difference ________________________________

West India (3) ☐

Please specify the difference ________________________________

*Note : Please specify the differences that are apparent between the three regions*

6. Do consumers seek product information on

Quality (1) ☐

Efficacy (2) ☐

Safety (3) ☐

Cheap (4) ☐

Availability (5) ☐

If so up to what extent? ________________________________________

7. Do consumers ask for products stating the name of the company?

Yes (1) ☐ No (0) ☐

Do consumers know the difference between the different categories of Siddha medicine and how it acts?

Yes (1) ☐ No (0) ☐

8. Are the pharmacists working in the chemist shops aware of the difference between different categories of Siddha drugs and how they act?

Yes (1) ☐ No (0) ☐

If yes, please specify ____________________________________

Do the company representatives speak about this aspect?

Yes (1) ☐ No (0) ☐

9. Do consumers show concern about the admixture of allopathic or non-permissible substances?

Yes (1) ☐ No (0) ☐

10. What suggestions can be made to improve public awareness about Siddha products? What steps can be taken both by the government and by industry to enhance public awareness on how to distinguish between products? QCI is a voluntary scheme. Can any other approach be suggested?

______________________________________________________________________

11. Prescription given by (with degree of authenticity)

Educational Qualified Doctors (1) ☐

Registered Traditional practitioner not educationally qualified (2) ☐

Quacks (3) ☐

Modern (allopathy) doctors (4) ☐

Self (5) ☐

# Annexure-II(c)

## Questionnaire on Consumer Preference of Unani Products

**Relates to:** Drugs and ASU products widely used by public for obtaining treatment / mitigation of disease or reducing debilitating conditions under Ayurveda, Siddha and Unani (ASU) systems of medicine:

### Introduction

1. Ayurvedic, Siddha and Unani medicine have been increasingly creating an interest within the country and abroad. Consumers are broadly aware of the benefits of relying on the ASU treatment regimens, medications and applications. But asked about the range of products that are easily accessible and are in comparatively higher demand, few people can give any response other than referring to a handful of products like Chawanprash, Liv 52 or Triphala and similar names.

2. Except for a handful of industries (eg Himalaya, Dabur, Baidyanath, Hamdard and Zandu) even the names of the manufacturers are not identifiable to most people. The safety and efficacy of the medicines is little known as many products do not match the level of scrutiny that is increasingly demanded for medicine to be accepted as efficacious, having minimal side effects which too are known and declared.

3. Some manufacturers do conduct studies on toxicology, undertake animal studies, publish monographs and their products have been in the market for several years. But since licensing of new ASU products (which all use formulations in the codified texts) is a relatively simple process with no requirement for clinical validation of safety and efficacy, there is nothing to distinguish products which are made following a sound manufacturing process, that abide by the Ayurvedic pharmacopoeia and formularies and those that simply make claims. In such a situation the public either ignores the ASU products altogether or whenever they use an ASU product, they rely on big names, family tradition, and word-of–mouth recommendations or access the products over-the -counter on the advice of practitioners or pharmacists employed by chemists. Practitioners either dispense medicine from their own pharmacies or give prescriptions-which forms a temporary basis for the selection of drugs.

4. Given this background, it is very difficult for an uninformed person to understand the range of hundreds of ASU products whether classical products or patent proprietary items. A majority of people remain ignorant about what is available, by what name the products can be accessed or how one product differs from the other. On the other hand, a section of people continue to access ASU products either over-the-counter or on the prescription of practitioners but what motivates them and the conditions, signs and symptoms for which they dominantly seek ASU medication is not known except anecdotally. Similar studies are available for allopathic drugs but hardly any information is forthcoming in respect of the ASU sector, except for a few scholarly articles and books which normally stop at examples of large manufacturers with a turnover of Rs 50 crore or more.

5. As far as the consumer is concerned, apart from knowledge and access issues, concerns about quality control are increasingly deterring even the most committed and determined users who on principle would like to avoid allopathic medicine because of fear of chemicals and harsh side-effects. But the absence of standardization, poor enforcement, units functioning without GMP and issue of licences in a perfunctory manner is the depiction that consumers read about. In actual fact, these realities continue despite several legal requirements having been imposed and measures to improve standardization and quality control having been mandated.

## Questionnaire

1. What are the disease/clinical conditions for which people access the ASU drugs — is it possible to say with any degree of authenticity that (for example) the fastest moving drugs are purchased for

| | | | |
|---|---|---|---|
| Skin disorders (1) | ☐ | Joint pains (2) | ☐ |
| Irritable bowel syndrome (3) | ☐ | Liver disorders (4) | ☐ |
| Asthma (5) | ☐ | cardiac problem (6) | ☐ |
| Amraz-e-Riya (Respiratory diseases) (7) | ☐ | | |

Any other ________________________________

2. The basis for giving this information may be provided either

| | |
|---|---|
| On the basis of sales figures (1) | ☐ |
| Or repeated prescription data handled by the pharmacist (2) | ☐ |
| Or as discussed with a cross-section of practitioners. (3) | ☐ |

3. Which category of Unani medicine appears to be most popular and for what treatment is that used?

| | | | |
|---|---|---|---|
| Arks (1) | ☐ | Kushta (2) | ☐ |
| Raughan (3) | ☐ | Majoon (4) | ☐ |
| Khamira (5) | ☐ | Sharbat (6) | ☐ |
| Qurs (7) | ☐ | Haboob (8) | ☐ |
| Jawarish (9) | ☐ | Joshanda (10) | ☐ |

Any other ________________________________

| Classical | | Patent Drugs | |
|---|---|---|---|
| **Jawarish Kamooni** | | **Dimagheen** | |
| Jawarish kamooni is a semisolid preparation | ☐ | Dimagheen is a semisolid prepeartion where | ☐ |
| It is for Loss of Appetite<br>Stomach Ache<br>Flatulence etc. | | Brain tonic, loss of memory, etc. | |
| **Khameera Gaozaban** | | **Hazoomi** | |
| Khameera is a semi-solid preparation | ☐ | It is in the form of haboob | ☐ |
| Cardiac tonic, palpitation, improve vision | | Indigestion, stomach ache | |

Dawaul Misk Maotadil

It is a semi-solid medicinal preparation ☐

Liver disorder, jaundice, and cardiac disorders

Arq Kasni

It is a liquid preparation, ☐

Anti inflammatory (reduces the inflammation in jaundice)

Sharbat Deenar

It is in the from of syrup ☐

Inflammation of liver, pain in stomach, Constipation etc.

Sharbat Nazla

It is in the from of syrup ☐

For cold and cough and seasonal flu constipation

Habb-e-Shifa

It is in form of Habb (pills) ☐

Cold & cough, headache, chronic fever

Khameera Khaskhas

It is semi solid preparation ☐

Nazla due to heat, and coolant property ☐

Itrifal Ustokhuddoos

It is a semisolid preparation ☐

Chronic sinusitis, and other brain disease.

Qurs Jiryaan

It is in form of Qurs. ☐

Premature ejaculation and other male Sexual disability

Sadri

It is in the form of syrup ☐

Branchial Asthma, and other respiratory disorders

Safi

It is in the from of syrup ☐

Purifies blood in case of pimples and other skin disorders

Tihali

It is in the from of syrup ☐

Malaria, seasonal fever, kala-azar and anaemia.

Roghan Badam Shirin

Oil is obtained from the drugs ☐

for skin and hair care, memory enhancer, etc.

Aujai

it is in the form of tablet ☐

Rheumatisms and Gout

Lipotab

It is in form of tablet or Qurs ☐

Control cholesterol, heart disease due to hypercholesteremia

Pachnool

It is in the form of Qurs

It is digestive

Masturin

It is in the form of syrup ☐

Uterine tonic, ensure pain free periods

4. A vast number of the medicaments available under the ASU systems can be purchased over the counter (OTC). Please indicate how the majority of consumers access the medication –

It is on prescription (1) ☐

by word of mouth (2) ☐

Through advertisement (3) ☐

on the recommendation of the chemist (4) ☐

5. There is considerable difference between the reliance placed upon the ASU products in

North India (1) ☐

Please specify the difference ______________________________

East India (2) ☐

Please specify the difference ______________________________

South India (3) ☐

Please specify the difference ______________________________

West India (4) ☐

Please specify the difference ______________________________

*Note : Please specify the differences that are apparent between the three regions*

6. Do consumers seek product information on

Quality (1) ☐

Efficacy (2) ☐

Safety (3) ☐

If so up to what extent? ___________________________________________

7. Do consumers ask for products stating the name of the company?

Yes (1) ☐ No (0) ☐

Do consumers know the difference between the different categories of ASU medicine and how it acts?

Yes (1) ☐ No (0) ☐

8. Are the pharmacists working in the chemist shops aware of the difference between different categories of ASU drugs and how they act?

Yes (1) ☐ No (0) ☐

If yes, please specify __________________________________

Do the company representatives speak about this aspect?

Yes (1) ☐ No (0) ☐

9. Do consumers show concern about the admixture of allopathic or non-permissible substances?

Yes (1) ☐ No (0) ☐

10. What suggestions can be made to improve public awareness about ASU products? What steps can be taken both by the government and by industry to enhance public awareness on how to distinguish between products? QCI is a voluntary scheme. Can any other approach be suggested?

# Annexure-III

## City-wise Findings on Public Perception of Ayurveda, Siddha and Unani Products

### City-wise Findings on Public Perception of Ayurveda Products

#### Navi Mumbai

- The fastest moving drugs or those in high demand were accessed for Liver disorders and Asthma followed by Skin disorders, Joints pains and Irritable Bowel Syndrome. Ayurvedic products were also purchased for certain diseases like kidney stone etc. The information is based on the average sales turnover of such drugs at the chemist's end.
- Churna and Syrup were the most popular modes of drug administration followed by Vatis and Syrup. Majority of consumers were influenced by word-of- mouth publicity followed by other modes of advertisement and prescription.
- There was a belief that ASU products manufactured in South India were more reliable and also more popular in south region.
- Most of the consumers were concerned about quality and efficacy of the drug.
- However, the consumers demanded the products stating the name of the company. They were aware of the difference between the different categories of ASU medicines and their applications. Pharmacists working in the chemist's shops too were aware about the difference between different categories of ASU drugs.
- The consumers were not concerned very much about the admixture of allopathic or non-permissible substances in ASU products.

#### Pune

According to the responses received, the drugs in high demand were mainly used for Joint pains and Skin disorders followed by liver disorders, Irritable Bowel Syndrome and Asthma. Besides, the drugs were purchased for treatment of Diabetes mellitus.

Both the sales figures and the repeated prescriptions handled by the pharmacist formed the basis for giving this information. Though the consumers have been using all the categories of products, Avaleha was the most popular dosage form.

Majority of the consumers accessed the medication mainly through word-of mouth publicity, advertisement and on the advice and recommendation of the chemists. They sought information on the quality and safety of the products.

The response showed that almost all the consumers sought products giving the name of the company. They were aware about the difference between the different categories of Ayurvedic medicines and their related applications. Pharmacists working in the chemist shops too were aware about ASU drug applications. The company representatives did not give information to them about these aspects.

The consumers however did not show concern about the admixture of allopathic or non-permissible substances in ASU products.

#### Delhi

In response to the questionnaire, it was observed that Delhi people prefer using Ayurvedic products for liver disorders which is the number one area for which Ayurvedic medicine is accessed, followed by joint disorders, skin disorders and coughs and colds. Besides these, Ayurvedic products were popular for treating sexual disorders and as general health enhancers. The average sales turnover of drugs was the main source for providing the information.

Majority of the people used Ayurvedic medicines in the form of Vatis and Capsules followed by syrups, powders and Avalehas. It was also observed that classical drugs are not popular as compared to proprietary products.

Majority of the consumers in Delhi accessed medications mainly guided by advertisements followed by physician's prescriptions and by word-of–mouth. The least number of consumers accessed drugs on the recommendation of stockists/sellers of medicine.

The practice of Ayurveda was far less in the Northern region as compared to other regions of the country for the following reasons:

i) Presence of Vaidyas and Hakims actually practicing the system was less in Northern India;

ii) Promotion of Ayurvedic products has not been taken by State Governments in North India as compared to promotional activities in South India.

The consumers did not ask for good products; instead they stated the name of the company. They were unaware about the difference between different categories and various forms of ingesting ASU medicines. They were not aware of their applications in relation to different medical conditions. The pharmacists working in the chemist shops also were not aware about the drug applications. However, they received some information from medical representatives.

Delhi consumers were not concerned about the admixture of allopathic or non-permissible substances in Ayurvedic medicines.

## Nagpur

The fastest moving consumer drugs (FMCD) were purchased for Joint pains and liver disorders followed by irritable bowel syndrome, gastric symptoms and acidity. The average sales figure of various products was the basis for giving this information. Repeated prescriptions for specific disease conditions or afflictions was the basis for giving the information. Although the consumers were using all categories of medicines, Churna and Syrups were the most popular forms.

The majority of the consumers accessed medication mainly through word-of-mouth publicity followed by advertisements and lastly on the recommendation and advice of shop owners/ chemists. They asked for the products by stating the name of the manufacturer but were not aware about the difference between the different categories of Ayurvedic medicines and their applications.

Pharmacists working in the chemists shops had little knowledge about different categories of Ayurvedic drugs. However they did receive this knowledge from the medical representatives.

The consumers did not evince concern about the admixture of allopathic and/or non-permissible substances with the Ayurvedic products.

## Indore

Based on consumer response, it was observed that fastest moving consumer drugs (FMCD) were purchased for joint pains followed by skin disorders, liver disorders, asthma and diabetes mellitus. The information is also based on the average sales turnover of products. The use of Vati was the most popular dosage form in comparison to other medicinal modes of administration.

Majority of the consumers accessed the products through word-of-mouth publicity. Most of the consumers indicated that ASU products of South and West India were more reliable because of their excellent quality. Information on the quality aspects was sought but less so relating to efficacy and safety of the products.

It was observed that almost all consumers asked for the products by stating the name of the manufacturing company. They were aware of the difference between the different categories of Ayurvedic medicines and their related applications.

Mixed responses have been received from pharmacists and employees working in different chemist shops. When asked whether they were aware about the difference between different categories of Ayurvedic drugs, it was observed that medical representatives had provided product information.

Consumers did not show concern about the admixture of allopathic or non-permissible substances in Ayurvedic products.

## Ghaziabad

From consumer responses it was apparent that the fastest moving Ayurvedic drugs were purchased for diseases like joint pains followed by skin disorders, irritable bowel syndrome and asthma. Ayurvedic medicines were also used for diseases like acidity, peptic ulcer, diabetes, hair fall, gastro-intestinal disorders, general debility, sexual disorders, leucorrhoea and constipation. The sales figures of drugs formed the most prominent basis for giving the information.

Among various categories of Ayurvedic medicines used by consumers, Vati, Churna, Taila, Asava/

Arishta, Syrup and Kwatha were the most popular forms of drugs followed by Rasayoga, Gugullu and Loha.

Majority of the consumers accessed the medication mainly through medical practitioner's prescriptions and advertisements followed by word-of-mouth publicity and on the recommendation of the chemist.

Most of the people relied on the Ayurvedic products manufactured in North India followed by products from South India. Consumers basically sought product information about quality and safety aspects rather on product efficacy.

It was observed that almost all the consumers directly asked for the products stating the name of the manufacturing company and majority of them were aware about the difference between the different categories of Ayurvedic medicines and their related applications.

Pharmacists/shop staffs working in the chemist shops were aware of the difference between different categories of Ayurvedic drugs. The medical representatives seldom spoke to them about these aspects.

The consumers did not show concern about admixture of allopathic drugs or the presence of non-permissible substances in Ayurvedic products.

## Ahmedabad

It was observed from the public response on the fastest moving consumer drugs (FMCD) related to medication for joint pains followed by skin disorders, irritable bowel syndrome, and asthma. The basis of giving this response was the repeated data handled by the pharmacist followed by average sales figures and discussions among a cross section of practitioners.

Among various categories of Ayurvedic medicines, use of Vati, Avaleha, Churna, Syrup and Kwatha were the most popular forms of drugs.

Majority of the consumers accessed the medication mainly based on media publicity and on the prescription of registered practitioners followed by word–of-mouth publicity.

Most of the people relied on Ayurvedic products procured from manufacturing companies located in South India. Consumers basically sought product information on product quality rather than product safety.

It was observed that almost all consumers directly asked for products stating the name of the manufacturing company. They were not aware about the difference between the different categories of Ayurvedic medicines and their applications.

It was observed that the pharmacists working in the chemist shops were aware of the difference between different categories of Ayurvedic drugs. The medical representatives did speak to pharmacists/ shop staff also.

The consumers did not show concern about the admixture of allopathic or presence of non-permissible substances in Ayurvedic products.

## Raipur

It was observed that the fastest moving consumer drugs (FMCD) are purchased by consumers for joint pains and liver disorders. It was observed that the sales figure formed the most prominent basis for giving the information.

Among the various categories of Ayurvedic medicines, Churna and Syrups were most popular forms of drug followed by Vati, Taila, Asava/Arishta, and Kwatha. The majority of consumers accessed the medication mainly through word-of-mouth publicity and other modes of advertisement.

People relied upon Ayurvedic products procured from South India because they thought the manufacturers in South region produced quality products. Most of the consumers basically sought product information on quality.

The consumers directly asked for the products stating the name of the company but they were not aware of the difference between the different categories of Ayurvedic medicines and their applications in different disease conditions.

Pharmacists/shop staff working in the chemist shops were not aware of the difference between different categories of Ayurvedic drugs. However, the medical representatives did speak to them about this aspect.

The consumers did not show concern about the admixture of allopathic or non-permissible substances in Ayurvedic products.

## Udaipur

It was observed from the responses that the fastest moving drugs were purchased for liver disorders and irritable bowel syndrome followed by joint pains, skin disorders and asthma. Despite these disease conditions, Ayurvedic products are also purchased for diabetes, ulcer and mental disorders. The sales figures formed the most prominent basis for giving this information.

Among various categories of Ayurvedic medicines Vati is most popular form of drug followed by Churna, Taila, Syrup and Asava / Arishta. Moreover, majority of the consumers accessed the medication mainly through advertisement and on prescription followed by the recommendation of the chemist and the least by word-of-mouth publicity. Most of the consumers were concerned about quality and drug efficacy.

Majority of the consumers demanded products stating the name of the company. They were aware of the difference between the different categories of Ayurvedic medicines and their applications. Pharmacists/ shop staff working in the chemist shops too were aware about the difference between different categories of Ayurvedic drugs.

The consumers were not anxious about the admixture of allopathic or non-permissible substances in Ayurvedic products.

## Hyderabad

It was observed from the responses that the fastest moving drugs were purchased for skin disorders, joint pains and liver disorders followed by irritable bowel syndrome and asthma. Despite these disease conditions, Ayurvedic products were also purchased for infertility, menstrual disorders, hemorrhoids, sciatica, hair loss and paralysis. The repeated data handled by the pharmacist and sales figures were the most prominent basis for giving this information followed by discussion with a section of practitioners

Among the various categories of Ayurvedic medicines, Churna & Syrup are most popular form of drug followed by Vati, Avaleha, Kwatha, Asava / Arishta, Guggulu, Ghrita and Taila.

Majority of the consumers access the medication mainly on the prescription and through advertisement and least assess it by mouth publicity and on the recommendation of the chemist.

Most of the people specified that the Ayurvedic products in South India are more reliable. Consumers basically seek product information on quality and safety followed by efficacy.

It was observed that the consumers asked directly for the products stating the name of the company, and majority of them were also aware of the difference between the different categories of Ayurvedic medicines and how they act.

Pharmacists working in the chemist shops were aware of the difference between different categories of Ayurvedic drugs. However, the company representatives also speak to them about this aspect.

Moreover, the consumers were least concerned about the admixture of allopathic/ non-permissible substances.

## Trivandrum

The fastest moving drugs were accessed for joint pains followed by skin disorders, liver disorders and asthma. Ayurvedic products were also purchased for Diabetes mellitus. The information is based on repeated prescription handled by the pharmacist.

Churna, Kwatha, Taila and Asava / Arishta were the most popular form of drugs. Majority of consumers were influenced by the advertisement for the use of Ayurvedic products.

The consumers were basically concerned about the quality of the drug. They demanded the products stating the name of the company, and were aware of the difference between the different categories of Ayurvedic products and their applications. Pharmacists working in the chemist shops were aware of the difference between different categories of Ayurvedic drugs.

The consumers showed concern about the admixture of allopathic/ non-permissible substances.

## Ernaculum

The fastest moving drugs were accessed for joint pains followed by skin disorders, liver disorders and asthma. Ayurvedic products were also purchased for Diabetes mellitus. The information is based on repeated prescription handled by the pharmacist.

Churna, Kwatha, Taila and Asava / Arishta were the most popular form of drugs. Majority of consumers were influenced by the advertisement for the use of Ayurvedic products.

The consumers were basically concerned about the quality of the drug, and demanded the products stating the name of the company. They were aware of the difference between the different categories of Ayurvedic products and their applications. Pharmacists working in the chemist shops were aware of the difference between different categories of Ayurvedic drugs.

The consumers showed concern about the admixture of allopathic/ non-permissible substances.

## City-wise Findings on Public Perception of Sidha Products

### Chennai

The fastest moving drugs were purchased for asthma, liver disorders, skin disorders and joint pains followed by gynecological disorders, lifestyle disorders and pediatric diseases. Products were also purchased for other diseases like nervous disorders and impotency.

Basis for giving this information was repeated data handled by the pharmacist followed by sales figure and the records of the Government and private hospitals.

Mathiri (Tablets), Churnam, Lehiyam, Thailam were the most popular forms of drugs.

Majority of the consumers accessed the medication on the prescription followed by word of mouth and different modes of advertisement. They sought product information on quality and safety, and asked the products stating the name of the company. Mixed responses were observed on the awareness about different categories of Siddha medicines and their action.

Owners, shop level staff and the pharmacists working in the chemist shops were also aware about different categories of Siddha drugs as the company representatives speak to them about this aspect.

The consumers did not show their concern about the admixture of allopathic/ non-permissible substances.

### Puducherry

The fastest moving drugs were purchased for skin disorders, joint pains and asthma followed by lifestyle disorders. The products were also purchased for infertility and impotency. The sales figure was the basis for giving this information followed by repeated data handled by the pharmacist.

Mathiri (Tablets), Churnam, Lehiyam, Thailam were most popular forms of drugs followed by Kudineer, Parpam, and kalimbu.

Majority of the consumers were accessed the medication mainly on prescription followed by word-of-mouth.

The consumers basically sought product information on quality followed by efficacy and safety. They asked for the products directly stating the name of the company and they were also aware about the different categories of Siddha medicines and their application.

Owners, shop level staff and pharmacists working in the chemist shops were aware about the different categories of Siddha drugs as the company representatives spoke to them about this aspect.

The consumers did not show their concern about the admixture of allopathic/ non-permissible substances.

## City-wise Findings on the Public Perception of Unani Products

### Srinagar, Anantanag, Pulwama, Jammu (Jammu & Kashmir)

The fastest moving Unani drugs were purchased for joint pains followed by liver disorders, skin disorders and irritable bowel syndrome. The products were also purchased for sexual dysfunction, renal stones, sinusitis, gynaecological disorders, chronic constipation, piles etc. The prescription handled by the pharmacists followed by discussion with a cross section of practitioners formed the basis for giving this information.

Khamira, Jawarish, Majoon, Qurs , Sharbat, Haboob, Raughan etc. were most popular forms of Unani. Mufradat (Single drugs, dry herb) Hamool, Siyaf were also the popular form of drugs.

Majority of the consumers access the medication

through prescription, followed by advertisement and the least number of consumers access it on the recommendation of the chemist.

A large number of Unani practitioners of North India were practising Unani System of Medicine and people are very much aware to the system of medicine.

The consumers were basically seeking product information on quality followed by efficacy. They were less concerned about safety. Majority of the consumers do not ask directly for the products stating the name of the company. They were somewhat aware about the different categories of Unani medicines and their action.

Pharmacists working in the chemist shops were aware about different categories of Unani drugs as they were registered with ISM Board. However, the company representatives also speak to them about this aspect. The consumers showed concern about the admixture of allopathic/ non-permissible substances to some extent.

## Meerut, Moradabad

The fastest moving Unani drugs were purchased for joint pains followed by liver disorders, skin disorders and irritable bowel syndrome. The products were also purchased for diseases like sexual dysfunction, renal stones, insomnia, diabetes, prostate and gastric problems like chronic constipation, piles etc

The basis for giving this information was cross-section discussion with practitioners followed by repeated data handled by the pharmacists / shopkeepers.

Khamira and Jawarish were most popular forms of drugs followed by Majoon, Qurs, Sharbat, Haboob, Raughan etc.

The consumers did not ask directly for the products stating the name of the company and there was little awareness about the different categories of Unani medicines and their application. The consumers accessed the medication mainly through the prescription followed by word-of-mouth and other modes of advertisement

The consumers basically sought product information on efficacy followed by quality. They were less concerned about safety due to minimal toxic effects as per their knowledge.

The pharmacists working in the chemist shops were aware about the difference between different categories of Unani drugs and the company representatives also spoke to them about this aspect.

Certain consumers showed concern about the admixture of allopathic/ non-permissible substances.

## Delhi

The fastest moving Unani drugs were purchased for liver disorders followed by skin disorders and asthma etc. The products were also purchased for disease like sexual dysfunction also.

The prominent basis for giving this information was sales figures followed by discussion with a cross-section of practitioners.

Sharbat and Jawarish were most popular forms of drugs followed by powder. Majority of the consumers accessed medication mainly through the advertisement followed by mouth publicity and prescription.

The consumers basically sought product information on efficacy followed by quality.

They sought the products stating the name of the company but they were not aware about the different categories of Unani medicines and their application.

Owners, shop level staff and pharmacists working in the chemist shops were aware about different categories of Unani drugs. However, the company representatives were also spoke to them in this aspect.

The consumers showed concern about the admixture of allopathic/ non-permissible substances in the products.

## Kolkota

The fastest moving Unani drugs were purchased for skin disorders followed by liver disorders, irritable bowel syndrome and asthma. The sales figures and discussion with a cross-section of practitioners were the basis for giving this information

Khamira and Majoon were the most popular forms of drugs followed by other dosage forms.

Majority of the consumers were accessed the medication mainly through the prescription, followed by word-of-mouth and different modes of advertisement. They sought product information on quality followed by safety. The issue on efficacy was least important.

Most of the consumers asked the products directly stating the name of the company. They were not aware about the different categories of Unani medicines and their application.

The pharmacists working in the chemist shops were aware about different categories of Unani drugs. The company representatives too spoke to them about this aspect.

The consumers showed their concern about the admixture of allopathic/ non-permissible substances in the drugs.

## Patna

The fastest moving Unani drugs were purchased for skin disorders followed by liver disorders, IBS and asthma. The sales figures and discussion with a cross-section of practitioners were the basis for giving this information

Khamira and Majoon were the most popular forms of drugs followed by other dosage forms.

Majority of the consumers were accessed the medication mainly through the prescription, followed by word of mouth and different modes of advertisement. They sought product information on quality followed by safety. The issue on efficacy was least important.

Most of the consumers asked the products directly stating the name of the company. They were not aware about the different categories of Unani medicines and their application.

The pharmacists working in the chemist shops were aware about different categories of Unani drugs. The company representatives too spoke to them about this aspect.

The consumers showed their concern about the admixture of allopathic/non-permissible substances in the drugs.

## Following suggestions were made to improve public awareness

a) Government should create awareness about Unani medicines through different modes of advertisements.

b) Unani practitioners should be registered and Government should stop the practices run by the quacks.

# Annexure-IV

## List of Questions sent to Manufacturers relating to Drugs and ASU Products widely used for Treatment /Mitigation of Disease or debilitating Conditions

### Introduction

The purpose of this exercise is to reflect upon present patient/beneficiary preferences which are a partial indication of where consumer needs and interest lies. Questions are often asked about what drugs/ medicaments under the Indian systems are most widely used. Either the responses are too diverse or too cryptic.

Until now, the effort in the government system has been to validate what is available in the classical texts, to prepare drugs/medication/applications in tune with what the systems refer to and test efficacy on limited groups of patients. Also to facilitate the standardisation of drugs and enhance quality control.

Manufacturers of ASU products in the private sector have been conducting their own research, preparing monographs and marketing classical as well as proprietary preparations. This questionnaire is aimed at seeking information about such drugs/ medications/applications to try and understand consumer preferences, the possible areas of growth reflected by sales, challenges faced by industry, quality control and marketing issues as experienced by Industry.

The questionnaire seeks to understand the size of the market, the size of each segment, subdivided on a regional basis if possible. The information given would be treated as confidential and would not be quoted or entered into the report without permission. However it is expected that the data given would be authentic and based upon reliable sources.

The questionnaire may be responded to as applicable but in case it does not apply advice may be given on better sources.

### Part I: Drug Formulation/Quality Control Issues/Consumer Preference of ASU Products.

1. Is there any representative survey available about the fastest moving drugs/applications used in the Ayurvedic/Unani/Siddha systems?

   Yes (1) ☐ No (0) ☐

   If yes, please indicate where it can be accessed and provide a summary of the findings.

   Which drugs and other medicaments under the Ayurveda / Unani / Siddha system are the most widely used on a regional basis? Please reply as applicable. Mention the products and the signs and symptoms they are used for. Please give numerical marking (1,2,3,4,etc next to each dosage form for top 5 categories of products)

| System | Dosage Form | Name of the product | | Region | Sign & Symptoms (as per labelling) |
|---|---|---|---|---|---|
| | | Classical | Proprietary | | |
| Ayurveda | Vati ( e.g Rank I ) | | | | |
| | Avaleha (e.g Rank 4 ) | | | | |
| | Churna | | | | |
| | Syrup | | | | |
| | Kwatha | | | | |
| | Parpati | | | | |
| | Ghrita | | | | |

| System | Dosage Form | Name of the product | | Region | Sign & Symptoms (as per labelling) |
|---|---|---|---|---|---|
| | | Classical | Proprietary | | |
| | Taila | | | | |
| | Asava/ Arishta | | | | |
| | Others | | | | |
| Siddha | Mathiri (Tablets) | | | | |
| | Senthooram | | | | |
| | Churnam | | | | |
| | Kudineer (Decoction) | | | | |
| | Parpam | | | | |
| | Kalimbu (Ointment) | | | | |
| | Lehiyam | | | | |
| | Thailam | | | | |
| | Manappagu (Syrup) | | | | |
| | Any other | | | | |
| Unani | Arks | | | | |
| | Kushta | | | | |
| | Raughan | | | | |
| | Majoon | | | | |
| | Khamira | | | | |
| | Sharbat | | | | |
| | Qurs | | | | |
| | Haboob | | | | |
| | Jawarish | | | | |
| | Joshanda | | | | |
| | Any other | | | | |

2. What are the diseases/clinical conditions for which people access the ASU drugs? A suggested list is given below with numerical marking (purely indicative). Please put the correct number in the box as per experience of your industry and add more boxes and names if needed.

| | | | |
|---|---|---|---|
| Skin disorders (1) | ☐ | Joint pains (2) | ☐ |
| Irritable bowel syndrome (3) | ☐ | Liver disorders (4) | ☐ |
| Asthma (5) | ☐ | Gynaecological Disorders (6) | ☐ |

Others ______________________________

______________________________

3. Apart from drugs as therapeutics what other products based on ASU ingredients are top sellers manufactured by your company? (Put a tick (" ) on the appropriate region)

| Products | Give Rank I,2,3,4 5 as applicable on Regional basis and name fastest moving item. | North | South | East | West |
|---|---|---|---|---|---|
| Toileteries | | | | | |
| Cosmetics | | | | | |
| Body enhancers | | | | | |
| Nutraceuticals | | | | | |
| Any other (Name product) | | | | | |

4. What are the sales figures for the fastest moving non therapeutic items (ex: Toileteries, Cosmetics, etc as mentioned above) sold as ASU medicine on a regional basis over a period of 3 years? Give data from published document or mention any other source. No reply should be shown as "Reply not given".

| Region | Non therapeutic items | Sales figure | Source |
|---|---|---|---|
| North | | | |
| South | | | |
| East | | | |
| West | | | |

5. A vast number of the medicaments available under the ASU systems can be purchased over the counter: (OTC.) Please indicate how the majority of consumers access the medication –

It is on prescription (1) ☐

By word of mouth (2) ☐

Through advertisement (3) ☐

On the recommendation of the chemist (4) ☐

## Research

1. Pharmacopoeias and formularies have been prepared for ASU drugs and considerable headway has been made in bringing out the publications, training the State Drug testing lab officials, pharmacies licencing authorities and drug inspectors. The First criticism however is that the States do not have anywhere near the manpower needed.

   Yes (1) ☐ No (0) ☐

2. The Second criticism is that pharmacies and manufacturers do not adhere to what has been recommended in the mandatory documents which have to be followed on the plea that the raw material is not of standard quality.

   Yes (1) ☐ No (0) ☐

3. The Third criticism is that there is no oversight and enforcement from the Drugs Controller/ licencing Authority in the States and licences are given without reference to whether the agency has the capability to follow the pharmacopoeia and formulary prescribed.

   Do you agree or disagree with this argument?

   Agree (1) ☐ Disagree (2) ☐

4. The Fourth criticism is that hardly any statutory or even survey samples are collected to give any confidence on the state of quality control.

   Are sufficient statutory or survey samples collected?

   Yes (1) ☐ No (0) ☐

5. The ultimate aim of the standardization work is to improve the quality of products made available to the public. What according to you are the ESSENTIAL, NON-NEGOTIABLE requirements that all manufacturers have to fulfill and what is the best way this can be enforced? Please write at least three major suggestions below and serial number them.

   Suggestions: -

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

6. Should the responsibility / liability for use of proper ingredients and following the process prescribed be placed on the owner/proprietor as opposed to the QC Manager who is only an employee?

   ____________________

## Part-II: Policy Issues

1. There is a growing interest in identifying and using drugs and other products which do not have a high dependence on chemicals and are essentially plant-based. The government has taken several measures to improve the availability of quality products like improving access to quality raw material, issuing pharmacopoeias and formularies, issuing GMP, cancelling the licences of non-GMP compliant

manufacturers, upgrading the State Quality Testing Laboratories and imparting training. Even so it is well known that there is considerable variation in manufacturing standards and quality of products.

Keeping in mind that health is a state subject under the Constitution, what policy initiatives can be recommended that augment knowledge about the ASU products and their benefits.

---

2. Has the functioning of the National Medicinal Plant Board improved availability of quality raw material?

   Yes (1) ☐ No (0) ☐

   If yes, then approximately to what percent?

   10% (1) ☐ 25% (2) ☐ 50% (3) ☐

   Not at all (4) ☐

   Give suggestions to improve the functionality of the National Medicinal Plant Board.

---

3. Raw material quality and sustained supply is a major issue . What steps do you suggest for certifying the quality of raw material used? What legal instrument can be used without causing harassment? Please give suggestions.

---

4. What suggestions can be made to improve public awareness about products in an ethical manner which inspires confidence? (For ex: through advertisements on television, in local buses, in trains, metro, etc)What can be said which builds confidence in a sustained manner but does not make wrong advertising claims?

---

5. It appears batch samples are not being insisted upon with the result that the presence of non-permissible substances and adulterants cannot be stopped by withdrawing the entire batch.

   Would the batch by batch inspection and withdrawing the entire batch help to reduce the problem?

   Yes (1) ☐ No (0) ☐

6. What essential steps can be taken to inspire public confidence **before** the aim of making the State Drug testing Laboratories fully functional is realized? Are there any legal changes that can make a big difference?

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7. Any other suggestions which can enhance the safety, efficacy and credibility of ASU products within the country?

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# Annexure-V

## List of Manufacturers to whom Survey Questionnaires were sent through ADMA

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 1 | Dabur India Limited | Ghaziabad | Uttar Pradesh |
| 2 | Himalaya Herbal Healthcare | Bangalore | Karnataka |
| 3 | Charak Pharma (P) Ltd. | Mumbai | Maharashtra |
| 4 | Natural Remedies Pvt. Ltd. | Bangalore | Karnataka |
| 5 | The Zandu Pharmaceuticals Works Ltd | Dadar | Maharashtra |
| 6 | Chemiloids | Vijayawada | Andhra Pradesh |
| 7 | Shree Baidyanath Ayurved Bhawan Pvt. Ltd | Patna | Bihar |
| 8 | Shree Dhootpapeshwar Ltd | Mumbai | Maharashtra |
| 9 | Sandu Brothers P. Ltd. | Mumbai | Maharashtra |
| 10 | Hindustan Unilever Ltd. | Bangalore | Karnataka |
| 11 | Emami Limited | Anandapur | West Bengal |
| 12 | Kerala Ayurveda Ltd | Ernakulam | Kerala |
| 13 | Vicco Laboratories | Mumbai | Maharashtra |
| 14 | Uma Ayurvedics Pvt. Ltd | Mumbai | Maharashtra |
| 15 | Ayurchem Products | Thane | Maharashtra |
| 16 | Hi-Tech Bio Sciences India Limited | Kothrud | Maharashtra |
| 17 | Vasu HealthcarePvt.Ltd., | Vadodara | Gujarat |
| 18 | Arya Vaidya Sala | Kottakkal | Kerala |
| 19 | Mehta Unani Pharmacy & Co. Pvt. Ltd | Rajkot | Gujarat |
| 20 | Ayurveda Rasashala | Pune | Maharashtra |
| 21 | Ban Labs Ltd. | Rajkot | Gujarat |
| 22 | Konark Herbals & Health Care | Mumbai | Maharashtra |
| 23 | Shree Dhanwantri Herbals | Amritsar. | Punjab |
| 24 | Dey's Medical Stores (Mfg) Ltd | Kolkata | West Bengal |
| 25 | Abhisheik Pharmaceuticals | Ludhiana | Punjab |
| 26 | Ansar Industries | Surat | Gujarat |
| 27 | Anju Pharmeuciticals | Indore | Madhya Pradesh |
| 28 | AYURPRIYA | Mumbai | Maharashtra |
| 29 | Ayusiddh Health Care P. Ltd | Ahmedabad | Gujarat |
| 30 | Amrita Drugs | Hyderabad | Andhra Pradesh |
| 31 | Ayurved Rasaushadhalaya | Pune | Maharashtra |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 32 | Amit Biotech (P) Ltd | Kolkata | West Bengal |
| 33 | Anuja Pharmaceuticals P. Ltd | Mumbai | Maharashtra |
| 34 | Akshay Pharma Remedies | Mumbai | Maharashtra |
| 35 | Alarsin | Mumbai | Maharashtra |
| 36 | Arogya Pharmacy | Mumbai | Maharashtra |
| 37 | Ayurved Pratisthan | Nashik | Maharashtra |
| 38 | Aayurmed Biotech Pvt. Ltd | Mumbai | Maharashtra |
| 39 | Aum Herbovedic and Cosmetics | Pune | Maharashtra |
| 40 | Arya Vaidya Nilayam Ltd. | Madurai | Tamil Nadu |
| 41 | Alathur Pharmaceutical Manufacturers' Association | Alathur | Tamil Nadu |
| 42 | Arvind Remedies Ltd. | Chennai | Tamil Nadu |
| 43 | Ayulabs Pvt. Ltd. | Rajkot | Gujarat |
| 44 | Ayushakti Ayurved Pvt.Ltd | Thane | Maharashtra |
| 45 | Ayurved Incorporation | Manavdar | Gujarat |
| 46 | Ayurveda Rasayani, | Pune | Maharashtra |
| 47 | Ayurvet Ltd. | Solan | Himachal Pradesh |
| 48 | Akshaya Remedies Pvt.Ltd | Pune | Maharashtra |
| 49 | Ashwin Fine Chemicals and Pharmaceuticals | Thane | Maharashtra |
| 50 | Atmasantulana Therapy Centre | Karla | Maharashtra |
| 51 | Aushadhi Bhavan | Nashik | Maharashtra |
| 52 | Ayurveda Herbals | Ahmedabad | Gujarat |
| 53 | Atlantic Pharmaceuticals | Mumbai | Maharashtra |
| 54 | Ashtavaidyan Thaikkattu Mooss | Thrissur | Kerala |
| 55 | Abhinav Healthcare Products Pvt. Ltd. | Mumbai | Maharashtra |
| 56 | Avitech Animal Health Pvt. Ltd | Gurgaon | Haryana |
| 57 | Amrut Pharmaceuticals | Mumbai | Maharashtra |
| 58 | Apcos Naturals | Mohali | Punjab |
| 59 | Atharv Ayurved Pharmaceuticals | Mumbai | Maharashtra |
| 60 | Ayurved Sumshodhanalaya (Pune) Pvt. Ltd | Pune | Maharashtra |
| 61 | Arya Aushadhi Pharmaceutical Works | Mumbai | Maharashtra |
| 62 | Amar Remedies Ltd., | Mumbai | Maharashtra |
| 63 | Aravali Chemicals P. Ltd | Mumbai | Maharashtra |
| 64 | Ayuherb Healthcare | Satara | Maharashtra |
| 65 | Ayurved India | Lucknow | Uttar Pradesh |
| 66 | Bipha Drug Laboratories | Kottayam | Kerala |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 67 | B.G. Pharmaceuticals | Bhubaneswar | Orissa |
| 68 | Bio Ved Pharmaceuticals Pvt. Ltd | Pune | Maharashtra |
| 69 | Bellan Pharmaceuticals | Vadodara | Guharat |
| 70 | BAPS Herbal Care | Ahmedabad | Gujarat |
| 71 | BACFO Pharmaceuticals (India) Limited | Delhi | New Delhi |
| 72 | Biocare Remedies Pvt. Ltd. | Gandhinagar | Gujarat |
| 73 | Bharat B Doshi & Mukesh D. Gathani | Baroda | Gujarat |
| 74 | Cholayil Pvt Ltd. | Chennai | Tamil Nadu |
| 75 | Chadda Trader | Kangra | Himachal Pradesh |
| 76 | Cosvedic Drugs P. Ltd | Nashik | Maharashtra |
| 77 | Clinfound Clinical Research Services Pvt. Ltd | Cochin | Kerala |
| 78 | CTIL Pharma Pvt Ltd | Mumbai | Maharashtra |
| 79 | Chawla Ayurvedic Pharmacy | Amritsar. | Punjab |
| 80 | Chandan Drug Pharma | Amritsar. | Punjab |
| 81 | Chawla Drug Pharma | Amritsar. | Punjab |
| 82 | CRIA Care Pvt. Ltd | Mumbai | Maharashtra |
| 83 | Chaitanya Pharmaceuticals P Ltd | Nashik | Maharashtra |
| 84 | Datu Manji Padamji Surmawala | Mumbai | Maharashtra |
| 85 | Dr. Jain's Forest Herbals P. Ltd. | Mumbai | Maharashtra |
| 86 | Dave Pharmaceuticals | Panvel | Maharashtra |
| 87 | Dr. Palep's Medical Research Foundation | Mumbai | Maharashtra |
| 88 | Deer Products | Mumbai | Maharashtra |
| 89 | Dhathri Ayurveda Pvt Ltd | Ernakulam | Kerala |
| 90 | Divya Pharmacy | Haridwar | Uttarakhand |
| 91 | Dhanshree Pharmacy | Vadodara | Gujarat |
| 92 | Dawn & Company Pvt. Ltd. | Mumbai | Maharashtra |
| 93 | Dr. Asma Herbals | Amritsar. | Punjab |
| 94 | Essar Pharma | Mumbai | Maharashtra |
| 95 | EURAFRIC Pharma Pvt Ltd | Ambarnath | Maharashtra |
| 96 | Epic Pharmeucititicals | Satara | Maharashtra |
| 97 | Growel Pharmaceuticals | Ghaziabad | Uttar pradesh |
| 98 | Fidalgo Healthcare | Ludhiana | Punjab |
| 99 | Glaxo Smithkline Asia Pvt.Ltd | Gurgaon | Haryana |
| 100 | Goswami Drugs | Ratangarh | Rajasthan |
| 101 | Goka Company | Nashik | Maharashtra |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 102 | GoodBee Honey & Spices Company | Bengaluru | Karnataka |
| 103 | Gurusiddhi Marketing & Exporters | Mumbai | Maharashtra |
| 104 | Harinarayan Pharmacy | Ahmedabad | Gujarat |
| 105 | Hasham Manji Padamshi Surmawalla | Mumbai | Maharashtra |
| 106 | Hesh Pharma | Mumbai | Maharashtra |
| 107 | Herbs N Drugs | Kolkata | West Bengal |
| 108 | Hindustan Biosynth Ltd. | Baroda | Gujarat |
| 109 | Healthcare Pharmaceuticals | Mumbai | Maharashtra |
| 110 | HPR Medicines Pvt. Ltd | Dombivli | Maharashtra |
| 111 | Hakeem ChiChi Pharmacy | Surat | Gujarat |
| 112 | Hemma Herbs P. Ltd | Kolkata | West Bengal |
| 113 | Harkab Chemicals Pvt. Ltd | Mumbai | Maharashtra |
| 114 | Herbotech India | Ludhiana | Punjab |
| 115 | Herb N Health | Mumbai | Maharashtra |
| 116 | Herbotech Pharmaceuticals | Amritsar. | Punjab |
| 117 | Hari Parasuram Aushadhalaya | Pune | Maharashtra |
| 118 | Isha Agro Developers P. Ltd | Mumbai | Maharashtra |
| 119 | Indian Herbs Research & Supply Co. Ltd | Saharanpur | Uttar Pradesh |
| 120 | Ivycomm Systems | Faridabad | Haryana |
| 121 | Ixoreal Boimed Pvt. Ltd. | Hyderabad | Andhra Pradesh |
| 122 | Immense Healthcare Pvt. Ltd. | Mumbai | Maharashtra |
| 123 | Jark Pharma Pvt. Ltd | Jamnagar | Gujarat |
| 124 | Jai-Son Herbals Pvt. Ltd. | Nashik | Maharashtra |
| 125 | Jiwadaya Netraprabha Pharmaceuticals | Mumbai | Maharashtra |
| 126 | Jenburkt Pharmaceuticals Ltd | Mumbai | Maharashtra |
| 127 | Jainson Pharmaceuticals Pvt. Ltd | Mumbai | Maharashtra |
| 128 | Jhawar Chemicals Pvt. Ltd | Harda | Madhya Pradesh |
| 129 | Jairamdass Khushiram | Mumbai | Maharashtra |
| 130 | Koral Pharma | Nashik | Maharashtra |
| 131 | Kanda Pharmacy | Ludhiana | Punjab |
| 132 | Kokban Ayurvedic Pharmaceuticals Pvt. Ltd | Mumbai | Maharashtra |
| 133 | Keva Industries | Ludhiana | Punjab |
| 134 | Kalyani Chemicals | Baghalpur | Bihar |
| 135 | Kumar Pharmaceuticals (India) | Jalandhar | Punjab |
| 136 | LVG Healthcare Pvt. Ltd. | Ahmedabad | Gujarat |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 137 | Mamata Herbals | Mumbai | Maharashtra |
| 138 | Mona Lab | Mazgaon | Maharashtra |
| 139 | Meridian Enterprises P.Ltd. | Mumbai | Maharashtra |
| 140 | M.H. Javerian & Sons | Mumbai | Maharashtra |
| 141 | Miracle Formulations India Pvt. Ltd. | Hyderabad, | Andhra Pradesh |
| 142 | Mission Vivacare Limited | Mumbai | Maharashtra |
| 143 | Manil Ayurved Pharma Pvt. Ltd. | Pune | Maharashtra |
| 144 | Manphar Ayurvedic Drugs | Hyderabad, | Andhra Pradesh |
| 145 | Millennium Herbal Care Ltd. | Mumbai | Maharashtra |
| 146 | Megha Herbal Healthcare Pvt. Ltd | Mumbai | Maharashtra |
| 147 | Maharishi Ayurveda Products Pvt. Ltd | Delhi | New Delhi |
| 148 | Minor Forest Produce Processing & Research Centre | Bhopal | Madhya Pradesh |
| 149 | Madaan Pharmaceuticals | Jalandhar | Punjab |
| 150 | Maa Sarada Agrotech & Dairy Pvt. Ltd. | Kolkata | West Bengal |
| 151 | Marico Limited | Mumbai | Maharashtra |
| 152 | Navin Ayurveda Pvt. Ltd., | Mumbai | Maharashtra |
| 153 | Nagarjun Pharmaceuticals (P) Ltd. | Ahmedabad | Gujarat |
| 154 | Numero – Uno Natural Herbs | Delhi | New Delhi |
| 155 | NASR Pharmaceuticals Pvt. Ltd | Mumbai | Maharashtra |
| 156 | Nanal Softwares & Herbals | Pune | Maharashtra |
| 157 | Navbharat Ayurvedic Pharmacy | Amritsar | Punjab |
| 158 | Nandan Pharma | Kundaim | Goa |
| 159 | Nandan BioMatrix Limited | Hyderabad, | Andhra Pradesh |
| 160 | NCL Agro Foods | Rajkot | Gujarat |
| 161 | Nagarjun | Nashik | Maharashtra |
| 162 | Omni Potent S Pharmaceuticals | Hissar | Haryana |
| 163 | Orient Ayurvedic Pharmacy | Chandisar | Gujarat |
| 164 | Oriental Medicines Pvt. Ltd | Alappuzha | Kerala |
| 165 | Om Ayurvedic | Mumbai | Maharashtra |
| 166 | Punarnava Ayurveda Pvt. Ltd | Coimbatore | Tamil Nadu |
| 167 | Paras Pharmaceuticals Ltd | Ahmedabad | Gujarat |
| 168 | Progen Research Lab | Belgaum | Karnataka |
| 169 | Punayur (India) Pharmaceuticals | Ludhiana | Punjab |
| 170 | Pacecon Technosys Pvt. Ltd | Mumbai | Maharashtra |
| 171 | Premji Laxman Ravarya | Mumbai | Maharashtra |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 172 | Pentavox Herbals P. Ltd. | Ludhiana | Punjab |
| 173 | Pharma Packaging | Mumbai | Maharashtra |
| 174 | Proctor & Gamble Hygine & Healthcare Ltd. | Mumbai | Maharashtra |
| 175 | Prophyla Biologicals Pvt. Ltd. | Mumbai | Maharashtra |
| 176 | Pitambari Products Pvt. Ltd. | Thane | Maharashtra |
| 177 | Pushpam Health Care Products | Pune | Maharashtra |
| 178 | Prakash Pharmaceuticals | Shimoga | Karnataka |
| 179 | Prabhat Ayurvedic Pharmacy | Amritsar | Punjab |
| 180 | Prince Pharma | Ludhiana | Punjab |
| 181 | Prashant Pharmaceuticals | Rajpipla | Gujarat |
| 182 | PAT Pharmaceuticals | Panvel | Maharashtra |
| 183 | Prakash Trading Co. | Mumbai | Maharashtra |
| 184 | Pure Botanicals | Mumbai | Maharashtra |
| 185 | Ratan Ayurvedic Sansthan Pvt. Ltd. | Indore | Madhya Pradesh |
| 186 | Rakesh Pharmaceuticals | Gandhinagar | Gujarat |
| 187 | RYM Exports | Mumbai | Maharashtra |
| 188 | Retort Pharmaceuticals Pvt. Ltd., | Chennai | Tamil Nadu |
| 189 | Rawal Medherb Consultants Pvt. Ltd., | Delhi | New Delhi |
| 190 | Rajasthan Herbal International | Mumbai | Maharashtra |
| 191 | Rajni Healthcare Products | Pune | Maharashtra |
| 192 | Rajan Pharmaceuticals | Pune | Maharashtra |
| 193 | Rajasva Pharma Enterprises | Nashik | Maharashtra |
| 194 | Rakesh Sandal Industries | Kanpur | Uttar pradesh |
| 195 | Rashsala Aushadhasram (Gondal) P.Ltd | Gurgaon | Haryana |
| 196 | Saini Hair Products (P) Ltd | Delhi | New Delhi |
| 197 | Swaarnim Naturscience Limited | Indore | Madhya Pradesh |
| 198 | Swarna Herbals Pvt. Ltd | Etah | Uttar Pradesh |
| 199 | Shivayu Ayurved Ltd. | Nagpur | Maharashtra |
| 200 | S. K. Oil Industries | Jalgaon | Maharashtra |
| 201 | Shree Dhanvantari Pharmaceuticals | Pune | Maharashtra |
| 202 | S. N. Pandit & Sons | Mysore | Karnataka |
| 203 | Shri Ayurved Seva Sadan | Firozabad | Uttar Pradesh |
| 204 | S G Phyto-Pharma Pvt. Ltd | Kolhapur | Maharashtra |
| 205 | Shree Akshar Pharmaceuticals P. Ltd. | Sabarkhanta | Gujarat |
| 206 | Shree Shanker Ayurvedic Pharmacy | Ahmedabad | Gujarat |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 207 | Sunrise Remedies Pvt. Ltd. | Gandhinagar | Gujarat |
| 208 | Simandhar Herbal Pvt. Ltd. | Mumbai | Maharashtra |
| 209 | Siddhagiri Pharma | Ratnagiri | Maharashtra |
| 210 | Shriji Herbal Products | Mumbai | Maharashtra |
| 211 | Swadeshi Pharmaceuticals | Udipi | Karnataka |
| 212 | Sri Padmamba Rasoushadha Karyalaya | Shimoga | Karnataka |
| 213 | Sahajanand Bio-Tech Pvt. Ltd. | Surat | Gujarat |
| 214 | Shree Swami Atmanand Saraswati Ayurvedic Co-op. Pharmacy Ltd., | Surat | Gujarat |
| 215 | SOS Pharma | Ludhiana | Punjab |
| 216 | SKM Siddha and Ayurvedic Medicines India Pvt. Ltd | Erode | Tamil Nadu |
| 217 | S.K Herbal & Bio Extracts | Mumbai | Maharashtra |
| 218 | Sheetal Medi-Care Products Pvt. Ltd. | Mumbai | Maharashtra |
| 219 | Shri Vardhman Udyog | Indore | Madhya Pradesh |
| 220 | Sanjeevani Pharma | Thane | Maharashtra |
| 221 | Shree Kamal Products | Panvel | Maharashtra |
| 222 | Sharangdhar Pharmaceuticals Pvt. Ltd. | Pune | Maharashtra |
| 223 | Safe Life Herbals Pvt.Ltd., | Mumbai | Maharashtra |
| 224 | Stiriti Ayur Therapies Pvt Ltd | Hyderabad, | Andhra Pradesh |
| 225 | Sahul India Limited | Kolkata | West Bengal |
| 226 | Trio Healhcare Pvt. Ltd, | Ahmedabad | Gujarat |
| 227 | The Ayurvedeeya Arkashala Ltd | Satara | Maharashtra |
| 228 | The Varma Pharmacy P. Ltd. | Pune | Maharashtra |
| 229 | Tulsi Amrit Pvt. Ltd. | Indore | Madhya Pradesh |
| 230 | Tulip Lab Pvt. Ltd. | Mumbai | Maharashtra |
| 231 | The Tamil Nadu Ayurvedic, Siddhaand Unani Drug Mfgs. Association | Chennai | Tamil Nadu |
| 232 | Tulison Pharma | Delhi | New Delhi |
| 233 | Total Herb solutions Pvt. Ltd. | Mumbai | Maharashtra |
| 234 | The Arya Vaidya Pharmacy (Coimbatore)Ltd. | Coimbatore | Tamil Nadu |
| 235 | UAP Pharma Pvt.Ltd | Ahmedabad | Gujarat |
| 236 | Unjha Ayurvedic Pharmacy | Unjha | Gujarat |
| 237 | Umalaxmi Organics Pvt. Ltd | Vadodara | Gujarat |
| 238 | Vedic Life Sciences Pvt. Ltd. | Mumbai | Maharashtra |
| 239 | Vital Care Private Ltd | Vadodara | Gujarat |
| 240 | V. K. Swamy Agency | Madurai, | Tamilnadu |

| S.No. | Member Company | Town | State |
|---|---|---|---|
| 241 | Vaishnavi Organic Farm | Mumbai | Maharashtra |
| 242 | Vatsal Ayurvedic Products (P) Ltd. | Nashik | Maharashtra |
| 243 | Vaidya Khadiwale Vaidyak Sanshodhan Sanstha | Pune | Maharashtra |
| 244 | Vitromed Healthcare | Jaipur | Rajasthan |
| 245 | Vetmed Pvt. Ltd. | Kolkata | W.B |
| 246 | Vikrant Brothers | Jabalpur | M.P |
| 247 | Valley Pharma, | Mumbai | Maharashtra |
| 248 | Welex Laboratories Pvt. Ltd | Mumbai | Maharashtra |
| 249 | Warrier's Hospital & Panchkarma Centre. | Alappuza, | Kerala |
| 250 | Wintrust Pharmaceutical Ltd | Ludhiana | Punjab |
| 251 | Western India Chemical Co | Mumbai | Maharashtra |
| 252 | Wilson Drugs & Pharmaceuticals Pvt.Ltd. | Jalandhar | Punjab |
| 253 | Wagbhat Aushdhalay | Sangli | Maharashtra |
| 254 | Yogi Ayurvedic Products Private Limited | Nashik | Maharashtra |
| 255 | Yogini Products | Thane | Maharashtra |
| 256 | Yogiraj Pharmacy | Mumbai | Maharashtra |
| 257 | Birla Lifesciences Pvt. Ltd | Mumbai | Maharashtra |
| | ASU ASSOCIATIONS | | |
| 1 | AMAM | Delhi | New Delhi |
| 2 | AMMOI | | Kerala |
| 3 | Federation of Indian Herbal Industry | | |
| 4 | 5 HADSA | | Maharashtra |
| 5 | FRLHT | | Karnataaka |
| 6 | KIMMA | | Karnataka |
| 7 | Konkan Seva sangh | | Maharashta |
| 8 | Maharashtra Ayurvedeeya Aushadhi Utpadak Sangh | | Maharashtra |
| 9 | MP Association | | M.P. |
| 10 | Nashik Division Ayurvedic Drugs Manufacturers' Association | | Maharashtra |
| 11 | Vidarbha Drug Manufacturers Association | | Maharashtra |
| 12 | Punjab Ayurvedic Drugs Mfrs Assn | | Punjab |

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# Epilogue

# Epilogue

This report has dealt with the here and now of Indian medicine. Until now it conveyed no vision and made no attempt to deal with globalisation. Perhaps the Epilogue is the place to project what could really make an impact. Since Ayurveda is a globally recognised name and one that represents 85 percent of Indian medicine, it is being used here as a generic term.

## Commission on Propagation and Globalisation of Ayurveda

Ayurveda is not only about health and medicine. It is a natural way of living; its beneficiaries are not restricted to the clientele of the Health sector alone but include several more. There is a need to give a thrust to the propagation and globalisation of Ayurveda by establishing a high-level Commission like the LM Singhvi Commission, which addressed issues related to NRI/PIOs.

Several institutions concerned with agriculture, animal husbandry, fertilisers and forestry, besides a whole host of scientific bodies, have a stake in Ayurveda. The Defence Research and Development Organisation (DRDO) had conducted extensive research into Ayurvedic drugs (for enhancing immunity and reducing high-altitude sickness). The Departments of Insurance, Commerce and Tourism, all can gain pre-eminence by promoting a business model for medical insurance and tourism through Ayurveda. Kerala has already done wonders for propagating Ayurvedic tourism. Rural Development and Tribal Affairs can level the playing field for the poorest segments of the supply chain that collect the plants – tribal folk, women and children.

Ayurvedic medicine has been shown to enhance stamina and endurance among athletes – which arguably does not amount to doping. The protection of biodiversity requires legal knowledge for which the Ministry of Environment and Forests can be the guide. A Commission with an overarching mandate can help leverage the enormous potential and capacities we already possess but which lie scattered.

## Comparison with Traditional Chinese Medicine (TCM)

The Chinese have taken their indigenous system of medicine very seriously and since 1972 have made systematic efforts to gain acceptance and recognition, primarily for acupuncture and herbal Chinese medicine. The website of the US National Institute of Health (NIH) and the National Center for Complementary and Alternative Medicine (NCCAM) (http://nccam.nih.gov/health/whatiscam/chinesemed.htm) indicate that traditional Chinese Medicine (TCM) is widely used in the United States. According to the 2007 National Health Interview Survey, which included questions on the use of various Complementary and Alternative (CAM) therapies, an estimated 3.1 million US adults had used acupuncture in the previous year. The survey notes that approximately 17 percent of adults use natural products, including herbal, making it the most commonly used therapy.

The federally recognized Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) accredits schools that teach acupuncture and TCM. About a third of the US states that license acupuncture require graduation from an ACAOM-accredited school. The National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) offers separate certification programs in acupuncture, Chinese herbology, and Oriental bodywork. Almost all licensing states require completion of NCCAOM's national written examination; some states also require a practical examination.

## Positioning *Panchakarma* like Acupuncture

Instead of positioning Ayurveda through the route of college degrees or supporting drug discovery efforts, there is a need to reposition *Panchakarma* as a recognised therapy for muskulo-skeletal and neurological problems including rheumatoid arthritis, Parkinsonianism and in Behavioural Science. A beginning could be made by demonstrating *Panchakarma* procedures on veterans suffering from post-trauma stress disorder (PTSD) to be observed by Veteran Affairs (VA) Department of US Defence.Were a high-level policy decision to be announced- for example if Indian Railways as the biggest employer in the public sector recognized Ayurvedic treatment for insuring accident cases, it would instill confidence.

Our missions abroad stock few CDs and leaflets here and there but efforts to market Indian medicine

have been lack-lustre and unconvincing. The propagation of Ayurveda which is well known worldwide (just by its name) could have been launched in innumerable ways by now but efforts, such as they were, have been too small and too sporadic to have had much impact. There needs to be an understanding that the propagation of Ayurveda is in the country's larger interest-that we are losing the opportunity to establish primacy in a field where we have all the credentials and goodwill to succeed. A Commission for the propagation and globalization of Ayurveda with a Secretariat located in the Department of AYUSH could bring dynamism into this sector; but it has to be viewed in a perspective that includes but transcends health and medicine.

## Research

When all is said and done, only clinical outcomes published in international journals would lead to recognition for Ayurveda including *Panchakarma*. The ground reality is that there is no legal scope to practice Ayurveda in most countries of the world, including the USA, primarily because of a lack of credible research. Also, there is an absence of a demonstrated will to break down barriers where they exist. India has also not persevered to obtain international funding available for research. This calls for a change of track before it is too late.

The single drug, molecular approach adopted over the last 40 years needs to see a paradigm shift, not by abandoning it altogether but by an infusion of comparative clinical studies to evaluate the effectiveness of Ayurveda. The present research orients itself to drug constituents rather than at clinical protocols. Clinical research needs to focus on the effectiveness of Ayurvedic treatment, not just drugs.

Indian groups need to seek support for research into specific areas (identified in the Research Chapter) and which are huge areas of current medical interest worldwide. The NCCAM-funded research on Chinese medicine includes investigating pelvic pain, irritable bowel syndrome and temporomandibular (jaw) disorders, and evaluating the effectiveness of Chinese herbal medicine for food allergies and osteoarthritis of the knee. There are several Ayurvedic regimens that can be similarly posed for international research funding, starting with *Panchakarma* for given conditions.

## Education

We need to offer postgraduate interdisciplinary training to modern scientists including medical anthropologists to increase the dialogue between Ayurveda and modern science. The focus has to be on producing peer reviewed research that can influence policymakers and consumers. This can happen if an opportunity is created for PhDs in modern medicine to take up special courses in Indian medicine and for Ayurvedic graduates to learn about high quality research methodologies to bring credibility to their work. A stated policy is required to overcome resistance by supporting multi-disciplinary projects in parallel.

## Export Potential

Years ago it was reported that India's earnings from this sector are less than two percent of what China earns from TCM. Things have not changed for the better. Policies and strategies that the Chinese have adopted over the years for globalisation of Chinese medicine need to be studied and documented. It would be worthwhile if the Indian Embassy in Washington DC identified a US-trained trade expert and a medical anthropologist familiar with the use of Chinese herbal medicine. Such people can help understand the most important reasons for the country's primacy in the field of traditional medicine in the US; also how India could leap-frog across many barriers that have already been overcome by the Chinese.

## Closing Words

This vision is not new. It is a repetition of what we as Indians often say to each other, hoping someone else will take the initiative. However no single Department, leave alone a body of persons, can achieve this. It requires the ability to see how the country can leverage the goodness of Ayurveda in a manner that benefits the Indian public and also gives us global recognition. Nowadays the American Medical Association (AMA) and its publication JAMA (Journal of the American Medical Association) are hugely exercised about heavy metal content in Ayurvedic formulations. This issue alone is enough to distort the globalisation discourse for a very long time. It already occupies centre-stage on the NCCAM's website on Ayurveda. The situation demands that massive attention be paid to GMP and testing for heavy metals and impurities, without which few will take us seriously.

The 12$^{th}$ Five Year Plan is on the anvil. The time to act is now.

**ABOUT THE AUTHOR**

Shailaja Chandra is a former IAS officer who served as Secretary to Government of India, Ministry of Health & Family Welfare, Department of Indian Systems of Medicine & Homoeopathy from 1999 to 2002. Prior to that, she had served as Additional Secretary and Joint Secretary in the same Ministry for seven years looking after medical education, research, public health and drugs. During the fifteen years with the Central Government she also served in the Ministries of Defence and Power. From February 2002 to June 2004 Shailaja Chandra was Chief Secretary, Government of Delhi. In 2006 she became the first Executive Director of the National Population Stabilisation Fund under the Health Ministry and served in that position until 2009. She writes regularly for different national newspapers and her book *It Crossed My Mind* (2006) highlights subjects of social concern. In recognition of her writings she has received the Ladli-UNFPA award for advocacy on population issues and gender sensitivity.